No. 2015-1170
(Reexamination No. 90/012,036)

United States Court of Appeals for the Federal Circuit

IN RE: RONALD A. KATZ TECHNOLOGY LICENSING, L.P.

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Reexamination No. 90/012,036

APPELLANT'S OPENING BRIEF

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January 30, 2015

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

In re Ronald A. Katz Technology Licensing, L.P., Appeal No. 2015-1170

CERTIFICATE OF INTEREST

Counsel for the Katz Ronald A. Katz Technology Licensing, L.P. certifies the following:

1. The full name of every party or amicus presented by me is:

Ronald A. Katz Technology Licensing, L.P.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

N/A

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

N/A

4. The following law firm and attorneys are expected to appear as counsel in this Court:

Cooley LLP: Frank V. Pietrantonio, Jonathan G. Graves, Lori R. Mason, Lowell D. Mead

The following law firms and attorneys appeared in the Patent Office on behalf of Ronald A. Katz Technology Licensing, L.P.:

Cooley LLP: Frank V. Pietrantonio

Date: January 30, 2015

/s/ Frank V. Pietrantonio
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TABLE OF CONTENTS

Page

TABLE OF CONTENTS
(continued)

Page

TABLE OF AUTHORITIES

Page(s)

CASES

Statutes

RULES

I. STATEMENT OF RELATED CASES

The following cases are believed to be related to the present case:

- *In re Katz Interactive Call Processing Patent Litigation*, Appeal Nos. 2009-1450, 2009-1451, 2009-1452, 2009-1468, 2009-1469, 2010-1017; Newman, Lourie, and Bryson, Circuit Judges; decided February 18, 2011; Rehearing and Rehearing En Banc Denied April 22, 2011; published in the Federal Reporter as *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303 (Fed. Cir. 2011).
- *In re Ronald A. Katz Technology Licensing L.P.*, Appeal Nos. 2013-1137, -1138, -1139.
- *Ronald A. Katz Technology Licensing L.P. v. American Airlines, Inc., et al.*, Case No. 2:06-cv-334-JRG (E.D. Tex.).
- Numerous actions that were previously pending in the *In re Katz Interactive Call Processing Patent Litigation* coordinated Multi-District Litigation ("MDL") proceedings, Case No. 2:07-ml-01816-RGK-FFM (C.D. Cal.).

II. STATEMENT OF JURISDICTION

This Court has exclusive jurisdiction over this appeal under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141. Patent owner Ronald A. Katz Technology Licensing, L.P. ("Patent Owner") appeals from a Decision on Appeal by the Patent Trial and Appeal Board ("Board") of the United States Patent and Trademark Office ("PTO") in Appeal No. 2014-005445, affirming the final rejection of U.S. Patent No. 5,815,551 ("'551 patent") claims 18 and 19 in Reexamination No. 90/012,036.

The date of the Board's decision, which is an appealable final order, is August 15, 2014. On October 14, 2014, Patent Owner timely filed a Notice of Appeal to this Court and served it on the Solicitor for the PTO, pursuant to 35 U.S.C. § 142, 37 C.F.R. § 1.304, 28 U.S.C. § 2107(b), and Federal Circuit Rule 15(a)(1).

III. STATEMENT OF THE ISSUES

1. Did the Board err as a matter of law by *sua sponte* construing the means-plus-function element "means to control processing formats of the analysis structure" in '551 patent claims 18 and 19 to correspond to only the "call data analyzer 20a" structure in the '551 patent specification, contrary to the claim construction of the Examiner and the Patent Owner that the corresponding structure includes an automated voice response structure?

2. Under the correct claim construction of "means to control processing formats of the analysis structure," is the corresponding structure in the '551 patent specification—an automated voice response structure—different from the DID trunk interface in the Moosemiller prior art reference, which is merely a signaling interface with no voice response structure or capability?

IV. STATEMENT OF THE CASE

This is an appeal from a Board decision dated August 15, 2014 in Board Appeal No. 2014-005445, affirming the final rejection of '551 patent claims 18 and 19 in Reexamination No. 90/012,036. Patent Owner appeals the Board's ruling affirming the rejection of claims 18 and 19 as obvious under 35 U.S.C. § 103(a).

V. STATEMENT OF FACTS

This appeal turns on a question of claim construction based solely on the intrinsic evidence, which remains an issue of law that this Court reviews *de novo*. The Patent Owner provides the following factual background relevant to the Court's resolution of this appeal.

A. The Patented Technology.

The '551 patent is one of a related family of patents on the inventions of Mr. Ronald A. Katz, dating from the 1980s, directed to inventive methods and systems enabling telephone callers to exchange information with computer systems through a telephone network. *See generally In re Katz*, 639 F.3d 1303 (Fed. Cir. 2011).

1. The Invention of Claims 18 and 19.

Claims 18 and 19 of the '551 patent are at issue in this appeal. Claim 18 depends from independent claim 14, and claim 19 depends from claim 18. The claims are reproduced below. The claim element at issue in this appeal—"means to control processing formats of said analysis structure" in accordance with DNIS signals—is emphasized in bold.

> 14. An analysis control system for use with a communication facility including remote terminals for individual callers, wherein each of the remote terminals comprises a telephonic capability including voice communication means and digital input means in

the form of an array of alphabetic numeric buttons for providing data, the analysis control system comprising:

interface structure coupled to the communication facility to interface the terminals for voice and digital communication and including structure to provide signals representative of data developed by the terminals;

voice generator structure selectively coupled through the interface structure to the terminals for providing vocal operating instructions to individual callers;

record memory connected to the interface structure for updating a file and storing data relating to certain individual callers;

qualification structure to access the record memory to test key number data provided by the individual callers to ensure that the key number data is valid;

generator structure selectively coupled to the interface structure and the record memory for providing computer generated numbers to the individual callers and storing the computer generated numbers in the record memory; and

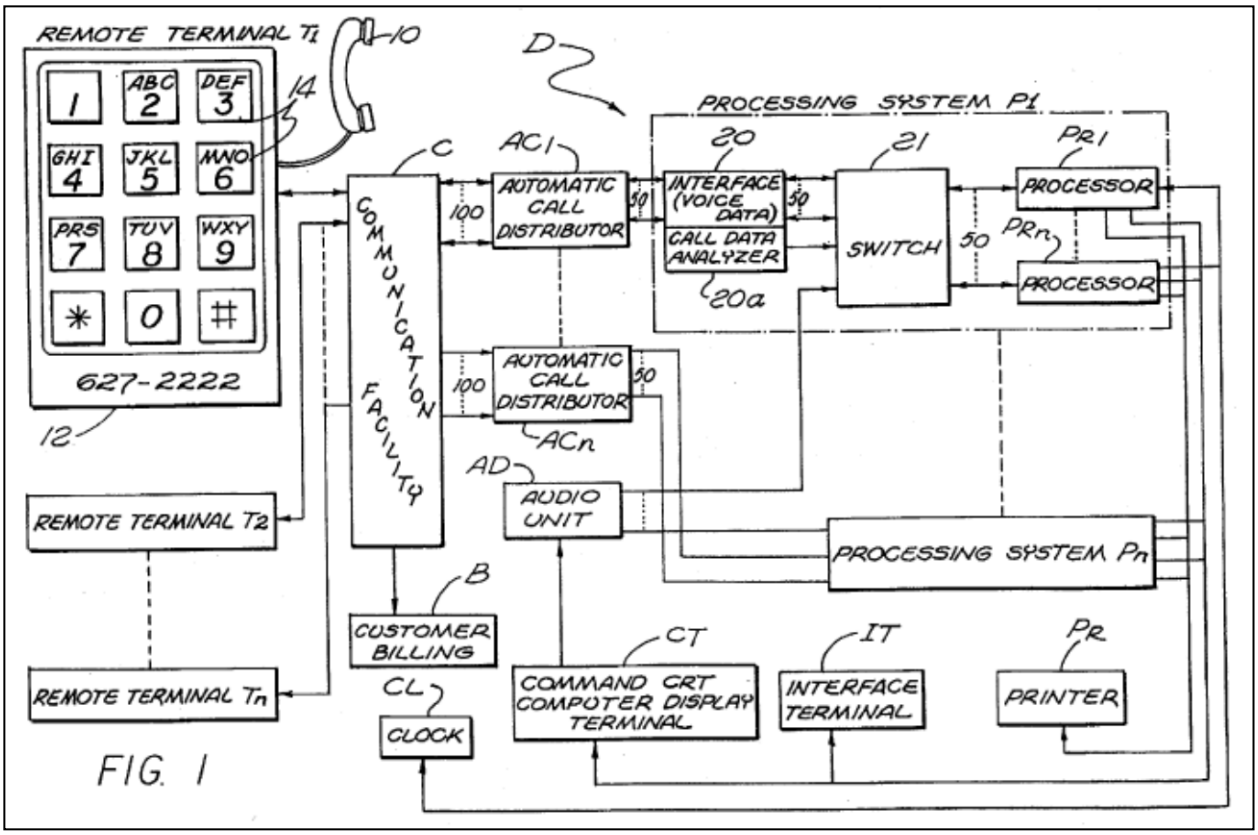
analysis structure connected to the record memory for processing at least certain of the data relating to certain individual callers subject to qualification by the qualification structure.

18. A control system according to claim 14, further including **means to control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)**.

19. A control system according to claim 18, wherein the data relating to certain individual callers includes calling number identification data for certain individual callers automatically provided by the communication facility.

2. The Patent Discloses Interface 20 as an Automated Voice Response Structure.

Figure 1 of the '551 patent, reproduced below, illustrates a typical structural arrangement underlying the inventions. Callers' remote terminals (*e.g.*, touch-tone telephones) connect through a communication facility (telephone network) to an automated voice response structure—interface 20. Interface 20 in turn connects (through a switch) to processing systems PR1-PRn, which implement "formats" that enable automated interactions between callers and a computer system.



(JA0025, '551 patent, Figure 1.)

3. Interface 20 Controls Formats of the Analysis Structure Using DNIS.

The specification describes interface 20 as having a range of functionality, including automated voice response capability and the capability to analyze DNIS data with its "call data analyzer 20a" subcomponent. The specification describes, for example:

> The interface 20 incorporates modems, tone decoders, switching mechanisms, DNIS and ANI capability (call data analyzer 20a) along with voice interface capability. Note that the interface may actually perform analysis on data.

(JA0032, '551 col. 4:51-55.) The specification describes that the telephone network connects (via a call distributor) to the interface 20, which can also take the form of a commercially available "Centrum 9000" unit: "Considering the processing system P1, fifty lines from the automatic call distributor AC1 are connected to the interface 20, an exemplary form of which may be a commercially available Centrum 9000 unit." (*Id.* at col. 4:48-51.)

The '551 patent specification teaches that the interface 20 receives DNIS data and uses it to control "formats" implemented by a processing system (as discussed further below). Interface 20 provides the connection between the telephone network and the processors PR1-PRn: "The interface

20 provides the connection of the fifty lines to a switch 21 which is in turn coupled to fifty function units, or processors PR1-PRn." (JA0033, '551 col. 5:8-11.) The specification teaches that DNIS capability (along with calling-number capability through ANI) is "available for use with equipment as the interface 20 and to provide control through the call data analyzer 20a." (JA0033, '551 col. 4:63-65.)

Thus, the interface 20 "provides the connection" to processors PR1-PRn for control based on DNIS, and those processors in turn implement the "formats" to interface with callers. (JA0033, '551 col. 5:8-18, 6:25-43, JA0035, '551 col. 9:44-10:5, 10:27-39, JA0039, '551 col. 18:61-65.) In this respect, the processors PR1-PRn are structures that correspond with the "analysis structure" in '551 patent claims 18 and 19, which implement formats as "said analysis structure" as recited in claim 18. (*Id*.)

Dialed Number Identification Service ("DNIS") is a service that identifies the telephone number called by a caller. The '551 patent describes DNIS as known in the field at the time: "Generally, DNIS capability is a function of the communication facility C (composite telephone system) to provide called terminal digital data indicating the called number." (JA0032, '551 col. 4:58-60.) When a caller places a telephone call to a party that has

subscribed to receive DNIS, the telephone network may send a DNIS signal along with the call that indicates which telephone number was dialed—for example, a DNIS signal "5678" could indicate that a caller dialed 1-800-555-5678.

The '551 specification describes that DNIS data can be used to identify or select a particular "format" with which the caller will interface. A "format" is a call processing flow that sets forth the content and sequence of steps to gather information from and convey information to callers through pre-recorded prompts and messages. *See In re Katz*, 639 F.3d at 1320.[1] For example, the '551 patent specification teaches that a caller dialing one telephone number may interface with a mail-order format where the caller can interact with a processing system—embodied in processors PR1-PRn—to order goods. (*E.g.*, JA0035, '551 col. 10:27-42 *et seq.* (mail order format implemented by processors PR1-PRn).) A caller dialing a different telephone number may interface with processors PR1-PRn implementing a health poll format, in which the caller answers a series of health-related questions. (*E.g.*, JA0033, '551 col. 6:38-46 (health poll format implemented by processors PR1-PRn).)

[1] The claim construction of "format" is not at issue in this appeal.

Accordingly, the specification describes that interface 20 (including its call data analyzer 20a subcomponent) uses the received DNIS data and "provides the connection" to control formats of the processors PR1-PRn (analysis structures). (*Id.*; JA0033-34, '551 col. 5:8-11, 4:63-65.) For example, in an exemplary embodiment, the caller may dial a specific number for a health poll, and the interface 20 uses DNIS to select the particular format for the caller:

> Pursuing the above example, assume the existence of a caller at the remote terminal T1 (telephone number (213) 627-2222) who wishes to pursue health-related information on the basis of statistical analysis. The caller lifts the hand piece . . . to call for a select operating format, e.g. telephone number (213) 627-3333 . . .. Receiving the call signal, the automatic call distributor AC1 associates the called number ((213) 627-3333, rendered available using standard telephone DNIS techniques) *through the interface 20* and the switch 21 to attain connection with the specific processor, e.g. the processor PR1 formatting the health-related program.

(JA0033, '551 col. 6:29-43 (emphasis added).)

In another embodiment, the specification teaches that the interface 20 uses DNIS to identify an exemplary mail-order operating format:

> Assume that a caller at a terminal T1 (FIG. 1) dials a specific number to identify a mail order interface with the system of FIG. 1. . . . As a result, the communication facility C couples the terminal T1 through the automatic call distributor AC1, *the interface 20* and the switch 21 to a select processor PR1 identified and programmed for a mail-order operating format. . ..

> Note that the communication facility C provides the dialed number ("(213) 627-4444") to the processing system P1 through well known telephonic equipment DNIS. Accordingly, *a program is selected to execute the mail order interface*. . . .

(JA0035, '551 col. 10:27-39 (emphasis added).)

The specification further teaches that the interface 20 uses DNIS to control formats of the processors, selecting a particular processor and format based on DNIS "through the interface units" such as interface 20: "Each of several television stations would solicit calls for different numbers as a result, either by *DNIS* or call channeling. *Select processors would be reached through the interface units, e.g. interface 20*." (JA0039, '551 col. 18:61-65 (emphasis added).)

The specification also describes an alternative embodiment, a geographically-distributed embodiment illustrated in Figure 9. In that embodiment, the system structures including the automated voice response interface structure are "spaced apart geographically," and the automated voice response structures are labeled as "interface units IA_1-IA_n and IB_1-IB_n." (JA0030, 41, '551 col. 21:12-30, Fig. 9.)

4. The Patent Discloses Interface 20 as an Automated Voice Response Structure.

As noted above, interface 20 is described as an automated voice response structure that contains a range of functionality, including "voice interface capability," "modems, tone decoders, switching mechanisms," and data processing capability as well as the capability to analyze DNIS data with its "call data analyzer 20a" subcomponent. (JA0032, '551 col. 4:51-55.) The specification further describes that interface 20 contains a "voice generator" that is used to provide automated voice messages and prompts to callers, and callers may respond by entering data (e.g., with push-button touch-tone signals) that are received and processed by the interface 20. For example:

- "the voice generator in the interface 20 formulates speech, a representative form of which might be: 'Thank you for participating in the coronary artery disease statistical analysis. . . .'" (JA0033, '551 col. 6:50-52.)
- "the voice generator in the interface 20 (FIG. 1) might signal: 'This transaction has been designated by the number 4951684 . . .'" (JA0034, '551 col. 8:42-45.)

Similarly, the interface 20 can receive and process signals and data relating to the caller, such as by using its "tone decoders" to decode touch-tone signals

received from the caller's push-button entries or by receiving the caller's telephone number through ANI signaling:

- "Upon establishing a connection, the interface 20 receives the caller's telephone number through ANI equipment and a data cell in the memory 98 (FIG. 4) is assigned to the caller." (JA0039, '551 col. 17:26-28.)
- "the voice generator in the interface 20 formulates speech . . . 'Please give us your telephone number by actuating the call buttons on your telephone instrument.' Acting on the instructions, the caller would push the buttons 14 in sequence to indicate his telephone number, e.g. '(213) 627-2222'. Alternatively, the interface 20 can accept the calling number ((213) 627-2222) according to its provision by standard ANI equipment of the communication facility C." (JA0033, '551 col. 6:50-60.)

Thus, as a district court observed in prior litigation, "the '551 patent describes an interface 20 having extended capabilities beyond merely providing the point of connection for calling terminals." *Verizon Cal. v. Ronald A. Katz Tech.*, 326 F. Supp. 2d 1060, 1096-97 n.11 (C.D. Cal. 2003).

B. The Asserted Prior Art References

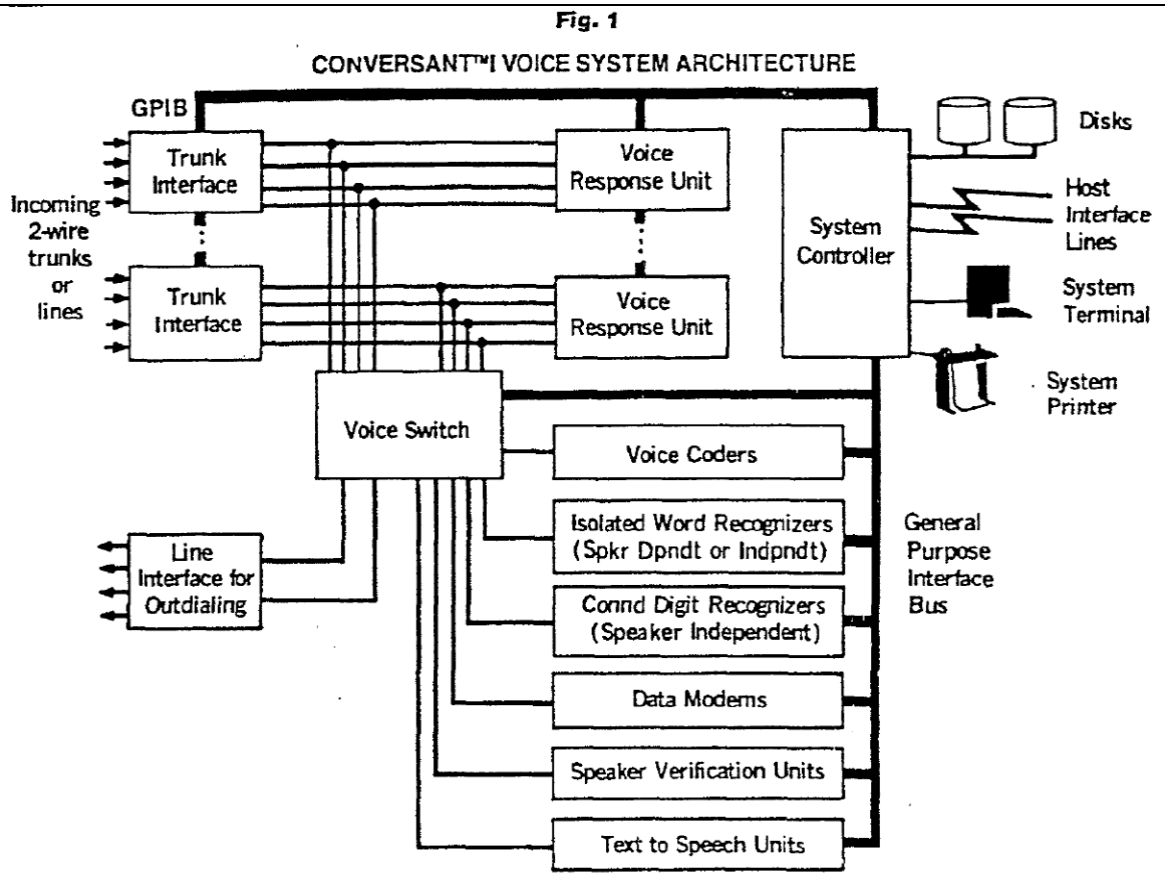
While the Board affirmed the Examiner's obviousness rejections over several references, only one prior art reference is relevant to the issues the Patent Owner raises in this appeal. The Moosemiller reference, a paper dating from 1986, describes the AT&T CONVERSANT I system for automated processing of telephone calls. (JA0816-821 (Moosemiller, "AT&T's CONVERSANT I Voice System").) Moosemiller describes that the system can receive DNIS using a DID (Direct Inward Dialing) trunk interface:

> The Dialed Number Identification Service (DNIS) has been used with a Direct Inward Dialing (DID) trunk interface to receive dialed digits as part of the call setup protocol. This allows advance classification of incoming calls for different applications which are greeted by appropriate transaction prompts.

(JA0816 (Moosemiller at 88).)

Moosemiller depicts the system architecture in its Figure 1, including the Trunk Interface structure in the upper-left side of the figure:

Moosemiller, Figure 1 (JA0817)



Moosemiller does not provide any other disclosure regarding the DID trunk interface. Moosemiller does not describe or suggest that the DID trunk interface contains a voice generator or any other voice-response structure or capability.

The Patent Owner submitted a sworn declaration from an expert in the field, Dr. Arthur Brody, explaining that a person of skill in the art would understand that "[t]he DID trunk interface in Moosemiller would merely be an interface that receives signals and communication from the network."

(JA0833 (Brody Decl. ¶ 11).) The Examiner and the Board did not cite any contrary disclosure in Moosemiller.

C. Procedural History of the '551 Patent and Reexamination

The '551 patent issued on September 29, 1998 as a continuation of an application filed May 16, 1988. The '551 patent expired in December 2005.

The PTO commenced the present reexamination proceeding, Reexamination Control No. 90/012,036, on January 27, 2012, based on a third-party request filed December 9, 2011.

1. The Examiner and the Patent Owner Both Construed "Means to Control Processing Formats" to Correspond to an Automated Voice Response Structure.

During the proceedings before the PTO and Board below, both the Patent Owner and the Examiner agreed that the "means to control processing formats of the analysis structure" claim element in claim 18, from which claim 19 depends, is a means-plus-function claim element. (JA0200, JA0475, JA2281.) The Patent Owner and the Examiner also agreed on the corresponding structures in the specification. (*Id*.)

The Patent Owner explained the corresponding structures are any of the alternatives (1) interface 20 and call data analyzer 20a, (2) Centrum 9000, or (3) the interface units IA_1-IA_n and IB_1-IB_n in the geographically-spaced

embodiment. (JA0200.) The Examiner concurred with the same claim construction. For example, in the Final Office Action, the Examiner explained:

> [T]he '551 patent specification discloses the DNIS information being provided by communication facility C to the interface processor 20 and call data analyzer 20a with the interface processor and call data analyzer providing 'control' of the DNIS capabilities and discerning which format to implement based on the DNIS signal provided. The '551 patent further provides the 'Centrum 9000 unit' as an exemplary embodiment of such an interface. In addition, the '551 patent provides another embodiment in which interface units IA_1-IA_n and IB_1-IB_n provide interface communication for executing the various formats.
>
> Thus, the '551 patent discloses the corresponding 'means to' for performing the function of 'control processing formats in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)' as being either an interface processor; a Centrum 9000; or an interface unit.

(JA0475 (FOA at 41).) The Examiner maintained the same claim construction in the Examiner's Answer before the Board. (JA2281 (Answer at 41).)

2. The Examiner Cited Moosemiller's DID Trunk Interface as Allegedly Disclosing the Claimed "Means to Control Processing Formats of Said Analysis Structure."

The Examiner relied on the Moosemiller prior art reference as allegedly disclosing the "means to control processing formats of said analysis structure"

means-plus-element of claim 18, from which claim 19 depends. (JA0173-177.) In the Examiner's initial rejection, the Examiner did not perform any means-plus-function analysis to determine the corresponding structures in the '551 patent specification and determine whether or not they are equivalent to any corresponding structure in Moosemiller. (*Id*.)

In response, the Patent Owner explained that Moosemiller had not been shown to disclose the "means to control processing formats" claim element, properly construed. (JA0200-201.)

In the Final Office Action, the Examiner identified the DID trunk interface in Moosemiller as allegedly corresponding to means-plus-function claim element. (JA0475, JA0477-478.) The Examiner did not assert that the DID trunk interface is the same as or equivalent to the voice interface units disclosed in the '551 patent. (*Id*.) The Examiner also did not attempt to identify any disclosure that Moosemiller's DID trunk interface has a voice generator or any other automated voice response structure or capability. (*Id*.) However, the Examiner maintained the obviousness rejection over Moosemiller. The Examiner similarly maintained the position before the Board that the DID trunk interface "is clearly an 'interface unit' that provides control (i.e. 'advance classification') of the different applications (i.e.

formats) based on the DNIS information being provided." (JA2282 (Examiner's Answer at 42).)

3. The Board Construed the "Means to Control Processing Formats" to Correspond to Call Data Analyzer 20a By Itself.

Although the Examiner and the Patent Owner agreed on the construction of the "means to control processing formats of said analysis structure," the Board *sua sponte* assumed a different claim construction in its decision. The Board stated that only the call data analyzer 20a, by itself, is the corresponding structure: "the call data analyzer 20a of the '551, which has DNIS capability, is the corresponding structure" for this element. (JA0008 (Board at 7).) The Board did not identify any error in the claim construction that the Examiner and the Patent Owner had both propounded.

Based on that claim construction, the Board found that Moosemiller's DID trunk interface is a structure equivalent to call data analyzer 20a. (JA0008-9 (Board at 7-8).) The Board did not find that the DID trunk interface would be equivalent to an automated voice response structure as described in the '551 patent specification, and did not cite any disclosure in Moosemiller that could have supported such a finding.

VI. SUMMARY OF THE ARGUMENT

1. Claims 18 and 19 of the '551 patent recite a system including a means-plus-function element: "means to control processing formats of said analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)." As a matter of claim construction, the '551 patent specification teaches that the corresponding structure is an automated voice response structure that contains automated voice interface structures and capability along with other functionality—interface 20 or equivalent automated voice response structures. In the proceedings below, both the PTO Examiner and the Patent Owner agreed on this corresponding structure.

2. The Board *sua sponte* adopted a different, erroneous claim construction that it relied upon to affirm the rejections of claims 18 and 19. The Board construed the "means to control processing formats of said analysis structure" to correspond only to a "call data analyzer 20a" subcomponent by itself. The Board's construction is erroneous because the call data analyzer 20a, by itself, is not clearly linked in the '551 patent specification to perform the recited function of controlling the formats of the analysis structure. As described in the specification, the call data analyzer

20a does not have any structural connection to the analysis structure to control the formats. Rather, the specification describes that the interface 20 provides the connection to the analysis structure (the processors PR1-PRn) and thereby controls the formats that they implement.

3. The Board found that the DID trunk interface in the Moosemiller reference is equivalent to the call data analyzer 20a in the '551 patent. The Board's finding relied on an erroneous claim construction. Under the correct claim construction, the Board did not make any finding that the DID trunk interface is the same as or equivalent to the automated voice interface unit disclosed in the '551 patent specification. Accordingly, the Court should vacate the Board's decision.

4. In addition to vacating the Board's decision, the Court should reverse the Board's ruling and confirm the patentability of claims 18 and 19. The record does not support a finding the DID trunk interface in Moosemiller is equivalent to the automated voice response structure disclosed in the '551 patent specification. Moosemiller does not disclose or suggest that the DID trunk interface contains any automated voice response structure or functionality. The DID trunk interface is merely a network signaling interface with no voice-response capabilities.

VII. ARGUMENT

A. Standard of Review

This Court conducts a *de novo* review of the Board's claim construction determinations that are based on the intrinsic evidence of the patent specification. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1252 (Fed. Cir. 2013); *Teva Pharms. USA, Inc.. v. Sandoz, Inc.*, __ U.S. __, No. 13-854, 2015 US LEXIS 628 (Jan. 20, 2015).

This Court's review of a decision by the Board "must be made on the grounds relied on by the agency." *In re Sang Su Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002), quoting *Burlington Truck Lines, Inc. v. United States,* 371 U.S. 156, 168 (1962). "If those grounds are inadequate or improper, the court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis." *In re Sang Su Lee*, 277 F.3d at 1345-46, quoting *Securities & Exchange Comm'n v. Chenery Corp.*, 332 U.S. 194, 196 (1947).

B. Claim Construction Standards

1. Claim Construction of an Expired Patent.

Where, as here, the patent at issue has expired, the applicable claim construction standard during reexamination is similar to that of a district court, under the principles articulated in *Phillips v. AWH Corp.*, 415 F.3d

1303 (Fed. Cir. 2005). *See In re Rambus Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012).

2. Claim Construction of Means-Plus-Function Claim Elements.

A claim element recited in means-plus-function in a pre-America Invents Act patent is governed by the former 35 U.S.C. § 112, paragraph 6 (now 35 U.S.C. § 112(f)). "The first step in construing a means-plus-function claim limitation is to define the particular function of the claim limitation." *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1333 (Fed. Cir. 2004) (citation omitted). "The next step in construing a means-plus-function claim limitation is to look to the specification and identify the corresponding structure for that function." *Id.* at 1334. "Under this second step, structure disclosed in the specification is corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003) (internal citation and quotation omitted).

C. The Board Erred in Construing "Means to Control Processing Formats of Said Analysis Structure."

The claim element "means to control processing formats of said analysis structure" is drafted in means-plus-function form, as the Examiner, Board, and Patent Owner all concurred. The element uses the word "means" and does not recite specific structure to overcome the "presumption that § 112 ¶ 6 applies." *TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259 (Fed. Cir. 2008).

The proper construction of this element—in particular, the correct identification of corresponding structure in the '551 patent specification—is the dispositive issue of this appeal. The Board erred because it failed to identify the correct corresponding structure that both the Examiner and the Patent Owner had agreed upon and identified.

1. The Corresponding Structure is Interface 20 or Alternative Automated Voice Interface Units.

The recited function of the claim element at issue is "control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)." The '551 patent specification clearly links and associates this function with the interface 20 structure, including its call data

analyzer 20a subcomponent. Interface 20 provides the connection between the telephone network and the processors PR1-PRn that implement the formats: "***The interface 20 provides the connection*** of the fifty lines to a switch 21 which is in turn coupled to fifty function units, or processors PR1-PRn." (JA0033, '551 col. 5:8-11 (emphasis added).) The interface 20 provides control of the formats using DNIS data, through its call data analyzer 20a subcomponent: DNIS capability is "***available for use with equipment as the interface 20 and to provide control*** through the call data analyzer 20a." (JA0032, '551 col. 4:63-65 (emphasis added).) The processors PR1-PRn implement the formats to interface with callers, corresponding with the "analysis structure" in '551 patent claims 18 and 19. (JA0033, '551 col. 5:8-18, 6:25-43, JA0035, '551 col. 9:44-10:5, 10:27-39, JA0039, '551 col. 18:61-65.)

The specification's detailed embodiments link the interface 20 to the use of DNIS to select the particular format for the caller in the processing systems:

> Pursuing the above example, assume the existence of a caller at the remote terminal T1 (telephone number (213) 627-2222) who wishes to pursue health-related information on the basis of statistical analysis. The caller lifts the hand piece . . . to call for a select operating format, e.g. telephone number (213) 627-3333 . . .. Receiving the call signal, the automatic call distributor AC1

> associates ***the called number ((213) 627-3333, rendered available using standard telephone DNIS techniques) through the interface 20*** and the switch 21 ***to attain connection with the specific processor, e.g. the processor PR1 formatting the health-related program***.

(JA0033 (‘551 col. 6:29-43) (emphasis added).) The called telephone number is rendered available through the interface 20, to attain connection with the processor (PR1, from the set of PR1-PRn) that implements a certain format, in this case a health-related format.

Similarly, the interface 20 uses DNIS to control an exemplary mail-order operating format implemented by a certain processor:

> Assume that a caller at a terminal T1 (FIG. 1) dials a specific number to identify a mail order interface with the system of FIG. 1. . . . As a result, the communication facility C couples the terminal T1 through the automatic call distributor AC1, ***the interface 20*** and the switch 21 ***to a select processor PR1 identified and programmed for a mail-order operating format***. . .. Note that the communication facility C provides the dialed number (“(213) 627-4444”) to the processing system P1 through well known telephonic equipment DNIS. Accordingly, a program is selected to execute the mail order interface. . . .

(JA0035, ‘551 col. 10:27-39 (emphasis added).)

The specification further reiterates that the interface 20 thus uses DNIS to control formats of the processors, involving selecting a particular processor and format based on DNIS: “Each of several television stations would solicit calls for different numbers as a result, either by DNIS or call channeling.

Select processors would be reached through the interface units, e.g. interface 20." (JA0039, '551 col. 18:61-65 (emphasis added).)

Consistent with the specification's teachings, the PTO Examiner in the proceedings below agreed with the Patent Owner that the correct corresponding structure includes the interface 20, or alternatively its commercial embodiment Centrum 9000 or geographically-distributed embodiment. (JA0475 (FOA at 41).) The Examiner never contended or suggested that call data analyzer 20a by itself was a corresponding structure.

2. The Call Data Analyzer 20a Identified By the Board Is Not Clearly Linked To Performing the Function.

Although the Examiner and the Patent Owner concurred on the correct claim construction, the Board *sua sponte* adopted a different claim construction and relied on that construction to affirm the Examiner's rejections of claims 18 and 19.

The Board ruled that the corresponding structure for the "means to control processing formats of said analysis structure" is only the "call data analyzer 20a" by itself. (JA0008 (Board at 7).)

The Board's claim construction is erroneous because the specification does not clearly link the call data analyzer 20a, by itself, to performing the function of "control[ing] processing formats of said analysis structure." *Med.*

Instrumentation, 344 F.3d at 1210. Nothing in the specification discloses that the call data analyzer 20a, by itself, connects to the processors that implement the formats and controls those formats. Moreover, call data analyzer 20a cannot be the corresponding structure because it does not provide the connection to "said analysis structure" as the recited function requires. As set forth above, the specification is clear that "*[t]he interface 20 provides the connection*"—not the call data analyzer 20a—into the analysis control system to the "function units, or processors PR1-PRn" that implement the formats. (JA0033, 5:8-18, 6:25-43, JA0032, '551 col. 4:63-65, JA0035, '551 col. 9:44-10:5, 10:27-39 (emphasis added).) As the specification reiterates, the select processors that implement the selected formats are "*reached through the interface units, e.g. interface 20*." (JA0039, '551 col. 18:61-65 (emphasis added).)

The Board apparently erred because its analysis focused narrowly on the DNIS limitation of the recited function. The Board quoted the '551 patent's disclosure that the "interface 20 incorporates . . . *DNIS and ANI capability (call data analyzer 20a) along with voice interface capability*." (JA0008 (Board at 7, quoting '551 col. 4:48-54) (emphasis by the Board).) But the recited function at issue is not merely "DNIS capability" as a general

matter. The recited function expressly requires the capability to *control formats of the analysis structure*—"to control processing formats of said analysis structure"—using DNIS. In the '551 patent specification, the interface 20 structure provides that control. While its subcomponent call data analyzer 20a would be understood to be involved with analyzing DNIS, call data analyzer 20a *by itself* is not disclosed as the corresponding structure.

D. The Court Should Vacate the Board's Decision Because It Relied on an Erroneous Claim Construction.

Based on its erroneous claim construction of the call data analyzer 20a structure, the Board found that Moosemiller's DID trunk interface discloses the "means to control processing formats of said analysis structure" claim element. The Board stated that, under its construction, "the DID trunk interface is an equivalent structure to the means-plus-function limitation of dependent claim 18." (JA0008 (Board at 7).) As set forth above, the Board's claim construction was in error.

"It is firmly established in our precedent that a structural analysis is required when means-plus-function limitations are at issue; a functional analysis alone will not suffice." *Fresenius USA, Inc. v. Baxter Int'l, Inc.*, 582 F.3d 1288, 1299 (Fed. Cir. 2012). "Just as a patentee who seeks to prove infringement must provide a structural analysis by demonstrating that the

accused device has the identified corresponding structure or an equivalent structure, a challenger who seeks to demonstrate that a means-plus-function limitation was present in the prior art must prove that the corresponding structure — or an equivalent — was present in the prior art." *Id*., citing *In re Donaldson Co.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (en banc); *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1361 (Fed. Cir. 2001) (Michel, J., dissenting).

The Board did not articulate any finding that Moosemiller discloses the "means to control processing formats of said analysis structure" element under the correct claim construction, where the corresponding structure includes interface 20 or its corresponding alternative structures. Accordingly, there is no basis for this Court to affirm the Board's decision based upon "the grounds relied on by the agency." *In re Sang Su Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002), quoting *Burlington Truck Lines*, 371 U.S. at 168. Because the Board relied on legally erroneous grounds, "the court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis." *In re Sang Su Lee*, 277 F.3d at 1345-46, quoting *Securities & Exchange Comm'n*, 332 U.S. at 196. Therefore, the Board's decision, which relied on an erroneous claim construction, should be vacated.

E. The Court Should Reverse the Board's Decision Because Moosemiller's DID Trunk Interface Is Not Equivalent to the '551 Patent's Voice Response Structures.

In addition to vacating the Board's ruling, this Court should reverse that ruling because the record does not support a finding that Moosemiller's DID trunk interface discloses the "means to control processing formats of said analysis structure" under the correct claim construction.

The Board's affirmance of the rejections of claims 18 and 19 rests on the Board's conclusion that Moosemiller's DID trunk interface discloses the "means to control processing formats of said analysis structure" element. (JA0008 (Board at 7).) The Board did not set forth any other basis to find that this element of claim 18 (from which claim 19 depends) was disclosed or rendered obvious by the prior art. Because the DID trunk interface in Moosemiller is not equivalent to the '551 patent's automated voice response structures, and there is no legally sufficient basis for such a finding, this Court should reverse the Board's ruling affirming the rejections of claims 18 and 19. *Fresenius*, 582 F.3d at 1299; *Donaldson*, 16 F.3d at 1194-97.

In these circumstances, cases such as *Donaldson* are instructive. In *Donaldson*, as in the present case, the Board's decision did not rely upon the correct corresponding structure for a means-plus-function claim element.

Donaldson, 16 F.3d at 1194-96. On appeal, the Court construed the means-plus-function element at issue to correspond to "a flexible-wall, diaphragm-like structure." *Id*. at 1196. Under that construction, the Court determined that the prior art "does not teach or suggest the flexible-wall, diaphragm-like structure claimed by" the element at issue. *Id*. In those circumstances, the Court found no reason to remand the case to the Board for further determination:

> For the foregoing reasons, we hold, as a matter of law, that Swift does not render the structure defined by claim 1 obvious under 35 U.S.C. § 103, and therefore we reverse the decision of the Board. On the record before us, we see no reason to remand this case for further findings as to 'equivalents' as suggested by the Commissioner.

Id. at 1197.

The same reasoning as in *Donaldson* applies here. As set forth above, the '551 patent discloses the corresponding structure for the "means to control processing formats of said analysis structure" as an automated voice response structure, including a voice generator and other structure and functionality. The DID trunk interface is not equivalent to the '551 patent's automated voice response structures—the interface 20 and its alternative disclosures (Centrum 9000 or geographically-distributed interface units)—because the DID trunk interface is merely a signaling connection. (JA0816 (Moosemiller

at 88); JA0833 (Brody ¶ 11).) Moosemiller does not disclose or suggest that the DID trunk interface contains any voice generator or any other automated voice response structure or functionality as required by the '551 patent's interface structures under the proper claim construction. As set forth above, the '551 patent expressly describes the interface 20 as containing "voice interface capability" as well as "modems, tone decoders, switching mechanisms," and DNIS and ANI functionality as well as data-processing capability to "perform analysis on data." (JA0032, '551 col. 4:51-55.) The interface 20 also contains a "voice generator" structure and can receive callers' inputs in response. (JA0033-34, '551 col. 6:50-52, 8:42-45.) As a district court previously summarized, "*the '551 patent describes an interface 20 having extended capabilities beyond merely providing the point of connection for calling terminals*." *Verizon Cal.*, 326 F. Supp. 2d at 1096-97 n.11 (emphasis added).

In contrast with this corresponding structure in the '551 patent, the DID trunk interface of Moosemiller merely provides a point of connection for the transmission of network signals. (JA0816 (Moosemiller at 88); JA0833 (Brody ¶ 11).) Moosemiller describes only a basic functionality to receive DNIS signals, with no other structures or capabilities of the DID trunk

interface: "The Dialed Number Identification Service (DNIS) has been used with a Direct Inward Dialing (DID) trunk interface to receive dialed digits as part of the call setup protocol." (JA0816 (Moosemiller at 88).) The DID trunk interface is not disclosed to contain any automated voice response structures or capabilities—no voice generator, no tone decoders, no data processing capabilities. It is simply a signaling interface. (JA0816 (Moosemiller at 88); JA0833 (Brody ¶ 11).) It is fundamentally different from the automated voice response structures described in the '551 patent. (*Id*.) There is no basis to find that it is equivalent to the automated voice response structures disclosed in the '551 patent. Accordingly, there is no reason to remand back to the Board; the Board's ruling should be reversed. *Donaldson*, 16 F.3d at 1197.

CONCLUSION AND STATEMENT OF RELIEF SOUGHT

The Board's decision relied upon an incorrect claim construction of "means to control processing formats of said analysis structure." Under the correct claim construction, the DID trunk interface of Moosemiller is not equivalent to the automated voice interface unit in the '551 patent specification. The Patent Owner accordingly requests that this Court vacate and reverse the Board's decision affirming the rejection of claims 18 and 19 of the '551 patent.

Dated: January 30, 2015

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By: /s/ Frank V. Pietrantonio
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ADDENDUM

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/012,036	12/09/2011	5815551	A2DL-001/47US 305918-2024	6296

58249 7590 08/15/2014

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EXAMINER	
RALIS, STEPHEN J	
ART UNIT	**PAPER NUMBER**
3992	

MAIL DATE	DELIVERY MODE
08/15/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RONALD A. KATZ TECHNOLOGY LICENSING L.P.
Appellant

Appeal 2014-005445
Reexamination Control 90/012,036
Patent 5,815,551
Technology Center 3900

Before DENISE M. POTHIER, ERIC B. CHEN, and IRVIN E. BRANCH, *Administrative Patent Judges*.

CHEN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. §§ 134(b) and 306 from the final rejection of claims 18 and 19. Claims 1-13, 16, 20, 21 and 23-35 are not subject to reexamination. Claims 14, 15, 17, and 22 haven been cancelled in a previous reexamination proceeding. We have jurisdiction under §§ 134(b) and 306.

An oral hearing was held on July 9, 2014. The record includes a written transcript of the oral hearing.

We affirm.

STATEMENT OF THE CASE

Reexamination Proceedings

A previous request for *ex parte* reexamination of U.S. Patent No. 5,815,551 (the '551 patent) was filed on May 31, 2006 and assigned Reexamination Control No. 90/008,039, resulting in the issuance of an *Ex Parte* Reexamination Certificate (8570th) on September 27, 2011, US 5,815,551 C1, in which claims 14, 15, 17, and 22 were cancelled.

A subsequent request for *ex parte* reexamination of the '551 patent was filed on December 9, 2011 and assigned Reexamination Control No. 90/012,036, which is the subject of this decision. The '551 patent, entitled "Telephonic-Interface Statistical Analysis System" issued September 29, 1998 to Ronald A. Katz, is said to be a continuation application of Application No. 07/335,923 filed April 10, 1989, now U.S. Patent No. 6,016,344, issued January 18, 2000, which is said to be a continuation of Application No. 07/194,258 filed May 16, 1988, now U.S.

Patent No. 4,845,739, issued July 4, 1989, which is said to be a continuation-in-part of Application No. 07/018,244 filed February 24, 1987, now U.S. Patent No. 4,792,968, issued December 20, 1988, which is said to be a continuation-in-part of Application No. 06/753,299 filed July 10, 1985, now abandoned.

The '551 patent is said to be assigned to Ronald A. Katz Technology Licensing L.P., the real party in interest. (App. Br. 3.) The '551 patent is said to have an expiration date of December 20, 2005 by virtue of a terminal disclaimer. (App. Br. 4.) Thus, the '551 patent is now expired.

Appellant's Invention

Appellant's invention relates to a telephonic-interface statistical analysis system including a multiplicity of individual terminals of a communications facility (Abstract; col. 4, ll. 17-18), processing systems and an associated series of automatic call distributors (col. 4, ll. 19-20; fig. 1). Callers using the individual terminals are prompted by voice-generated instructions to provide digital data that are stored for processing. (Abstract.) The communications facility is connected to the processing systems through the automatic call distributors. (Col. 4, ll. 17-19.) The processing systems include an interface with voice interface capabilities (col. 4, ll. 51-54), memory cells for storing caller's individual data (col. 5, ll. 15-16), a qualification unit (col. 10, ll. 2-5; fig. 4) for screening callers (col. 3, l. 21) and a random number generator (col. 10, ll. 19-21; fig. 4) to create an identification number for each caller (col. 12, ll. 62-65).

Related Litigation

The '551 patent is or has been involved in numerous litigations, as summarized in the Related Proceedings Appendix. (App. Br. 50-72.)

The Claims

Claims 14, 18, and 19 are exemplary and reproduced below with disputed limitations in italics:

> 14. An analysis control system for use with a communication facility including remote terminals for individual callers, wherein each of the remote terminals comprises a telephonic capability including voice communication means and digital input means in the form of an array of alphabetic numeric buttons for providing data, the analysis control system comprising:
>
> interface structure coupled to the communication facility to interface the terminals for voice and digital communication and including structure to provide signals representative of data developed by the terminals;
>
> voice generator structure selectively coupled through the interface structure to the terminals for providing vocal operating instructions to individual callers;
>
> record memory connected to the interface structure for updating a file and storing data relating to certain individual callers;
>
> qualification structure to access the record memory to test key number data provided by the individual callers to ensure that the key number data is valid;
>
> generator structure selectively coupled to the interface structure and the record memory for providing computer generated numbers to the individual callers and storing the computer generated numbers in the record memory; and

analysis structure connected to the record memory for processing at least certain of the data relating to certain individual callers subject to qualification by the qualification structure.

18. A control system according to claim 14, further including *means to control processing formats of the analysis structure* in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS).

19. A control system according to claim 18, *wherein the data relating to certain individual callers includes calling number identification data for certain individual callers automatically provided by the communication facility*.

The Rejections

1. Claim 18 stands rejected under 35 U.S.C. § 103(a) as obvious over Yoshizawa (Kanichiro Yoshizawa et al., *Voice Response System for Telephone Betting*, 26 Hitachi Rev. 215-220 (1977)) and Moosemiller (John P. Moosemiller, *AT&T's Conversant™ I Voice System*, SPEECH TECH. 88-93 (1986)).

2. Claim 19 stands rejected under 35 U.S.C. § 103(a) as obvious over Yoshizawa, Moosemiller, and Szlam (US 4,797,911; Jan. 10, 1989).

3. Claims 18 and 19 stand rejected under 35 U.S.C. § 103(a) as obvious over Yoshizawa and Friedes (A. Friedes et al., *ISDN Opportunities for Large Businesses – 800 Customer Service*, IEEE INT'L CONF. ON COMM. 29-32 (1986).

Appellant relied upon the following in rebuttal to the Examiner's rejection:

Declaration under 37 C.F.R. § 1.132 of Arthur Brody, Ph.D., dated June 10, 2013.

Declaration under 37 C.F.R. § 1.132 of Eric Cherry, dated June 4, 2013.[1]

ANALYSIS

§ 103 Rejection – Yoshizawa and Moosemiller

We are unpersuaded by Appellant's arguments (App. Br. 13-14; *see also* Reply Br. 3-4) that the combination of Yoshizawa and Moosemiller would not have rendered obvious independent claim 18, which includes the limitation "means to control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)."[2]

The Examiner found that the Direct Inward Dialing (DID) trunk interface of Moosemiller corresponds to the limitation "means to control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)." (Ans. 18-19, 41-42.) In particular, the Examiner interpreted the language "means to control processing formats of the analysis structure" as a means-plus-function limitation and identified the corresponding structure from the Specification of the '551 patent as "either

[1] This opinion only addresses arguments made by Appellant. Arguments not made are considered waived. *See* 37 C.F.R. § 41.37(c)(1)(vii). We have considered the declaration evidence to the extent raised by Appellant's arguments.

[2] Because the '551 patent is now expired, rather than applying the "broadest reasonable interpretation" standard, we review the claims of an expired patent similar to that of a district court's review. *In re Rambus Inc.*, 694 F3d 42, 46 (Fed. Cir. 2012).

an interface processor; a Centrum 9000; or ***an interface unit***." (Ans. 41.) The Examiner further found that the Direct Inward Dialing (DID) trunk interface of Moosemiller performs the function specified in the claim and is the same structure as or an equivalent structure to the means-plus-function limitation. (Ans. 42.) We agree with the Examiner.

We interpret the claim limitation "means to control processing formats of the analysis structure" as a mean-plus-function clause. The recited function is to "control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)." The Specification of the '551 patent discloses that:

> Considering the processing system P1, fifty lines from the automatic call distributor AC1 are connected to the interface 20, an exemplary form of which may be a commercially available Centrum 9000 unit. The interface 20 incorporates modems, tone decoders, switching mechanisms, *DNIS and ANI capability (call data analyzer 20a) along with voice interface capability*.

(Col. 4, ll. 48-54 (emphasis added).) Accordingly, the call data analyzer 20a of the '551, which has DNIS capability, is the corresponding structure for performing the function "control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)."

Moosemiller relates to the AT&T CONVERSANT™ I Voice System, "a voice response and speech recognition product for the growing market of automated information services" that "accesses data bases via the public telephone network." (P. 88, col. 1, para. 1.) Applications for the IVR (interactive voice response) system of Moosemiller include financial

services, credit authorization, wholesale and retail distribution, sales order entry, direct marketing, transportation scheduling and dispatching, college registration, communication services (p. 88, col. 1, para. 3), "stock quotations, catalog ordering, airline reservations, dial-it information menus, caller destination control, and telephone banking" (p. 92, col. 1).

Moosemiller explains that:

> The Dialed Number Identification Service (DNIS) has been used with a Direct Inward Dialing (DID) trunk interface to receive dialed digits as part of the call setup protocol. This allows advance classification of incoming calls for different applications which are greeted by appropriate transaction prompts.

(P. 88, col. 3.) Because the function of the DID trunk interface of Moosemiller is "advance classification of incoming calls for different applications" (i.e., the claimed "formats"), the DID trunk interface of Moosemiller is an equivalent structure to the means-plus-function limitation of dependent claim 18.

Appellant argues that "[t]he DID trunk interface in Moosemiller would merely be an interface that receives signals and communication from the network, rather than a device to control formats such as by selecting a format from among multiple formats" and that the DID trunk interface of Moosemiller is "not equivalent to any of (a) interface 20 and call data analyzer 20a; (b) Centrum 9000; or (c) one or more of interface units IA1-IAn, IB1-Ibn [shown in Figure 9]." (App. Br. 14*; see also* Reply Br. 3-4.) To support this position, Appellant points to paragraphs 9-11 of the Brody Declaration. (*Id.*) The relevant portions of the Brody Declaration state that "the Office Action does not identify any identical or equivalent structure in

Moosemiller that performs the recited function" (Brody Decl. ¶ 10) and that "[t]he DID trunk interface in Moosemiller would merely be an interface that receives signals and communication from the network, rather than a device to control formats such as by selecting a format from among multiple formats" (*id*. at ¶ 11). However, the statements in the Brody Declaration relied upon by Appellant lack persuasive factual support because the Brody Declaration does not cite to sufficient corroborating evidence. *See In re Beattie*, 974 F.2d 1309, 1313 (Fed. Cir. 1992) ("[D]eclarations themselves offer only opinion evidence which has little value without factual support."). Furthermore, contrary to Appellant's arguments, the DID trunk interface of Moosemiller performs "advance classification of incoming calls for different applications," and thus, the DID trunk interface of Moosemiller is an equivalent of the means-plus-function limitation of dependent claim 18.

Accordingly, we agree with the Examiner that the combination of Yoshizawa and Moosemiller would have rendered obvious dependent claim 18, which includes the limitation "means to control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)."

We are also unpersuaded by Appellant's arguments (App. Br. 15-29; *see also* Reply Br. 6-7) that the Examiner improperly combined Yoshizawa and Moosemiller.

As discussed previously, the Examiner found that the DID trunk interface of Moosemiller corresponds to the limitation "means to control processing formats of the analysis structure in accordance with signals

automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS)." (Ans. 18-19, 41-42.) The Examiner also found that "some race track[s] [in Yoshizawa]. . . only a have a few number of race tracks and do not want to be affiliated with larger systems" and "bettors would only call the race track they wanted to bet on." (Ans. 48.) Accordingly, the Examiner concluded that "[i]t would have been obvious . . . to use **DNIS** signals to automatically classify the calls at least as to the race course location in Yoshizawa et al., in order to enhance the operation of the Yoshizawa system by preclassifying calls according to race course location." (Ans. 19.) We agree with the Examiner.

Yoshizawa relates a telephone betting system that uses a voice response unit (VRU) to automate the sale of parimutuel tickets. (P. 215, col. 1, para. 4.) The telephone betting system includes a public telephone network, the VRU and a central processing unit (p. 215, col. 2, para. 6; fig. 1), with the VRU having up to 128 lines (p. 215, col. 2). Table 1(a) provides an overview of typical input items and voice responses for placing a bet. After calling the telephone betting center, a subscriber is prompted for a "subscriber number" and "password number" (table 1, "(a) When making a bet," Item 1), followed by a prompt for "race course" (e.g., "05" for Tokyo) (*id.*, Item 2). Yoshizawa further explains that other applications of the VRU include, for example, "seat reservations (for trains, planes, and theaters)" and "hotel and hospital reservations systems." (P. 220, col. 1, para. 3.)

A person of ordinary skill in the art would have recognized that incorporating the known DNIS of Moosemiller with the telephone betting system of Yoshizawa would improve Yoshizawa by providing the ability to

classify incoming calls (e.g., according to a track code). *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Alternatively, the combination of Yoshizawa and Moosemiller is nothing more than incorporating the known DNIS of Moosemiller with the known telephone betting system of Yoshizawa, to yield predictable results. *Id.* at 416. Thus, we agree with the Examiner (Ans. 19) that modifying Yoshizawa to incorporate the DNIS of Moosemiller would have been obvious.

First, Appellant argues that "Yoshizawa discloses only a single call flow (the horse race betting call flow) with which each caller can interact" and "[t]here is no disclosure or suggestion in the reference contemplating multiple different applications that would run simultaneously with a different set of prompts and exchanges with each caller." (App. Br. 15.) Similarly, Appellant argues that "[w]hile Yoshizawa discloses possible expansion up to '6 units' and functionality that can provide 'different responses simultaneously through a large number of lines' . . . these are not multiple different formats" but "the same horse race betting application in Yoshizawa's single-application system, which could be expanded in capacity to handle additional lines and callers for that single application." (App. Br. 16; *see also* Reply Br. 4.) To support these positions, Appellant points to paragraphs 12-13 of the Brody Declaration. (App. Br. 15, 16.) The relevant portions of the Brody Declaration states that "Yoshizawa does not disclose or suggest to a POSITA [person of ordinary skill in the art] a system that could operate multiple different formats at the same time" because "Yoshizawa discloses only a single call flow (the horse race betting call flow) with which each caller can interact" (Brody Decl. ¶ 12) and

"Yoshizawa's description of its underlying hardware structures including possible expansion up to '6 units' . . . are merely describing that the system can handle multiple lines and callers at the same time for the same horse race betting application in Yoshizawa's single application system" (*id*. at ¶ 13). Again, the statements in the Brody Declaration relied upon by Appellant lack persuasive factual support because the Brody Declaration does not cite to sufficient corroborating evidence. *See Beattie*, 974 F.2d at 1313. Furthermore, Yoshizawa provides other applications for the VRU (e.g., seat reservations for trains, planes, and theaters (p. 220, col. 1, para. 3)) and thus, suggests multiple "formats."

Second, Appellant argues that "Yoshizawa's Table 1 shows that the caller enters a two-digit 'Race Course' code to identify the race course for the race to be bet upon" and "[t]he caller need only know and use one telephone number to place bets for many different race courses, which serves the objectives of convenience and efficiency." (App. Br. 17; *see also* Reply Br. 5-6.) Accordingly, Appellant argues, "[t]he proposed modification using DNIS to classify calls according to race course, with a different telephone number for each track, would not have been obvious" because "[i]t would have frustrated the primary objective of convenience for a bettor." (App. Br. 17.)

To support this position, Appellant points to documentary evidence in the form of telephonic betting instructions from several horse race gambling organizations (e.g., Television Games Network (TVG), New York Racing Association (NYRA), Interbets, Winners, Nassau Downs, and New Jersey Account Wagering), in which a caller enters a two- or three-digit "track

code" or "track number." (App. Br. 18-23.) However, such documentary evidence is cumulative because Yoshizawa already explains that such race track codes were well-known and conventional. Appellant has provided insufficient evidence to directly rebut the Examiner's articulated rationale for combining Yoshizawa and Moosemiller, which is based upon modifying Yoshizawa to incorporate DNIS signals to route calls to a specific race courses for subscribers that only bet on that single race course, rather than using DNIS signals to completely replace the two-digit race course.

To further support this position, Appellant also points to paragraphs 1-15 of the Cherry Declaration and paragraphs 14-21 of the Brody Declaration. (App. Br. 25.) The relevant portions of the Cherry Declaration states that "I am . . . not aware of any horse race service provider that operated telephonic services for multiple different race tracks, but still required the caller to dial a different telephone number for each race track, using DNIS to identify each different race track program" and "it would have been counter-productive and inconvenient to operate a different telephone number for each race track and force the caller to hang up and dial a different number for each racetrack." (Cherry Decl. ¶ 13.) Likewise, the relevant portions of the Brody Declaration states that "if Yoshizawa were modified to use different telephone numbers for each race track . . . that would not mean that all the race track programs would be operated on the same system" and "[t]o the contrary, different race tracks or consortiums would be understood to compete with each other for remote off-track betting, and would have their own different systems, each system operating one track betting program." (Brody Decl. ¶ 19.) Again, the statements in

the Cherry and Brody Declarations relied upon by Appellant lack persuasive factual support because such Declarations does not cite to sufficient corroborating evidence. *See Beattie*, 974 F.2d at 1313. Furthermore, similar to the previous discussion, such Declarations provide insufficient evidence to rebut directly the Examiner's articulated rationale for combining Yoshizawa and Moosemiller, which is based upon modifying Yoshizawa to incorporate DNIS signals to route calls to a specific race courses for subscribers that only bet on that single race course.

Last, with respect to the "Other Applications of Voice Response Unit" section in Yoshizawa, Appellant argues that "[t]his section is not describing that the Yoshizawa betting application would be combined with other different applications" but "this section is only making reference to multiple independent and distinct uses of the voice response unit (VRU)." (App. Br. 26; *see also* Reply Br. 7.) Contrary to Appellant's arguments and as found by the Examiner (Ans. 51), Yoshizawa explains that the VRU has other applications that include "seat reservations (for trains, planes, and theaters)" and "hotel and hospital reservations systems" (p. 220, col. 1, para. 3), and thus, suggests multiple "formats."

Therefore, the Examiner has properly combined Yoshizawa and Moosemiller to reject dependent claim 18 under 35 U.S.C. § 103(a).

Accordingly, we sustain the rejection of dependent claim 18 under 35 U.S.C. § 103(a).

§ 103 Rejection – Yoshizawa, Moosemiller, and Szlam

We are unpersuaded by Appellant's arguments (App. Br. 27-29; *see also* Reply Br. 7-8) that the combination of Yoshizawa, Moosemiller, and Szlam would not have rendered obvious dependent claim 19, which includes the limitation "wherein the data relating to certain individual callers includes calling number identification data for certain individual callers automatically provided by the communication facility."

The Examiner found that the Automatic Number Identification (ANI) service of Szlam corresponds to the limitation "wherein the data relating to certain individual callers includes calling number identification data for certain individual callers automatically provided by the communication facility." (Ans. 23, 53-57.) The Examiner concluded that:

> it would have been obvious . . . to use "Automatic Number identification" (**ANI**) data of certain subscribers to automatically answer and obtain information of the calling number of the subscriber of Yoshizawa et al. in view of Moosemiller et al., in order to provide for online, and direct updating of the customer account information.

(Ans. 23.) We agree with the Examiner.

Szlam relates to customer account servicing systems, in particular, "placing outgoing calls, routing incoming calls, and online servicing of customer accounts." (Col. 1, ll. 6-9.) Szlam explains that a local telephone office provides a called automatic number identification (ANI) service (col. 12, ll. 29-31), and that "the present invention provides an apparatus which automatically answers incoming calls, obtains the calling party's telephone number from the telephone company central office equipment, [and] retrieves, from the mainframe, the current customer account

information corresponding to the calling party's telephone number" (col. 2, ll. 59-65).

A person of ordinary skill in the art would have recognized that incorporating the ANI service of Szlam with the telephone betting system of Yoshizawa, as modified by Moosemiller, would provide the advantage of automatically retrieving the customer account information corresponding to the calling party's telephone number. *See KSR*, 550 U.S. at 417. Thus, we agree with the Examiner (Ans. 23) that incorporating the ANI service of Szlam with Yoshizawa and Moosemiller would have been obvious.

First, Appellant argues that "[t]o use ANI with the Yoshizawa application would make no sense at all, and would run contrary to the convenience objective of Yoshizawa to permit and facilitate telephone betting from anywhere, even 'on a street corner'" (App. Br. 27; *see also* Reply Br. 8) and "Yoshizawa already has a suitable method of identifying the caller—the entry of a 'subscriber number'—so that the caller can call from anywhere and enter the subscriber number to place a bet, rather than being tied or restricted to certain calling telephone numbers." (App. Br. 28). However, the Examiner cited to the "private home" embodiment of Yoshizawa, rather than the "on a street corner" embodiment of Yoshizawa. (Ans. 53.)

Second, Appellant argues that "[i]f ANI were used to identify the caller, such as based on the home telephone number of the bettor, then anyone at that home who dialed the system—including minor children—would be recognized based on the same ANI" and "[u]sing ANI with Yoshizawa would therefore be disadvantageous in this respect, and not

obvious." (App. Br. 28; *see also* Reply Br. 8.) However, as found by the Examiner (Ans. 55), Yoshizawa explains that the VRU prompts the subscriber to enter a "password number" (table 1, "(a) When making a bet," Item 1).

Third, Appellant argues that "[c]urrent telephone betting systems likewise confirm that it would not have been beneficial to use ANI to identify calling bettors, because these systems use caller-entered account numbers to identify callers" and that "[i]f it were beneficial, advantageous, and obvious to use ANI to identify calling bettors, these systems would do so." (App. Br. 28.) To support this position, Appellant points to paragraphs 22-26 of the Brody Declaration. (*Id.*) The relevant portions of the Brody Declaration states that: (i) "a POSITA would understand that 'any street corner' includes the then still prevalent public telephones, regardless of the different number of telephone numbers that could be identified per subscriber within the system" (Brody Decl. ¶ 24); (ii) "using the password number to identify the caller is unworkable, because passwords are typically defined by the user to be memorable" and "[t]he system would have to ask people sharing the ANI not to use the same password" (*id.* at ¶ 25); and (iii) "Yoshizawa's important stated objective that bets can be placed from anywhere, including any street corner, would directly discourage the POSITA from identifying the caller based on ANI" (*id.* at ¶ 26). Again, the statements from the Brody Declaration relied upon by Appellant lack persuasive factual support because such paragraphs do not cite to sufficient corroborating documentation. *Beattie*, 974 F.2d at 1313. Furthermore, as discussed previously, the combination Yoshizawa,

Moosemiller, and Szlam is based on the improvement of a similar device in the same way as in the prior art (i.e., automatically retrieving the customer account information corresponding to the calling party's telephone number).

Last, Appellant argues that "Yoshizawa does not disclose the use of any operator, and in fact adding an operator would further run contrary to Yoshizawa's objectives" because "Yoshizawa states that its objective is to provide the betting service 'automatically' using the VRU." (App. Br. 28.) However, the Examiner's proposed modification of Yoshizawa is not based upon incorporating the live operators of Szlam. (*See* Ans. 23.) Instead, the Examiner's proposed modification of Yoshizawa is based upon automatically retrieving the customer account information corresponding to the calling party's telephone number. (*Id.*)

Thus, we agree with the Examiner that the combination of Yoshizawa, Moosemiller, and Szlam would have rendered obvious dependent claim 19, which includes the limitation "wherein the data relating to certain individual callers includes calling number identification data for certain individual callers automatically provided by the communication facility."

Accordingly, we sustain the rejection of dependent claim 19 under 35 U.S.C. § 103(a).

§ 103 Rejection – Yoshizawa and Friedes

We do not reach the rejection of claims 18 and 19 under 35 U.S.C. § 103(a) as obvious over Yoshizawa and Friedes. Affirmance of the obviousness-based rejections discussed previously renders it unnecessary to reach the remaining obviousness rejections, as all of pending claims have

been addressed and found unpatentable. *Cf. In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009).

DECISION

The Examiner's decision rejecting claims 18 and 19 is affirmed.

Requests for extensions of time in this *ex parte* reexamination proceeding are governed by 37 C.F.R. § 1.550(c). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

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US005815551A

United States Patent [19]

Katz

[11] Patent Number: 5,815,551

[45] Date of Patent: *Sep. 29, 1998

[54] **TELEPHONIC-INTERFACE STATISTICAL ANALYSIS SYSTEM**

[75] Inventor: **Ronald A. Katz**, Los Angeles, Calif.

[73] Assignee: **Ronald A. Katz Technology Licensing, LP**, Los Angeles, Calif.

[*] Notice: The term of this patent shall not extend beyond the expiration date of Pat. No. 4,845,739.

[21] Appl. No.: **473,320**

[22] Filed: **Jun. 7, 1995**

Related U.S. Application Data

[63] Continuation of Ser. No. 335,923, Apr. 10, 1989, which is a continuation of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned.

[51] **Int. Cl.**[6] **H04M 1/66**; H04M 3/50; H04M 11/08

[52] **U.S. Cl.** **379/88**; 379/91.02; 379/127; 379/189; 379/198; 379/265

[58] **Field of Search** 379/67, 88, 89, 379/92, 97, 127, 142, 201, 207, 245, 246, 247, 265, 266, 189, 92.01, 92.03, 93.27, 93.25, 198, 196, 91.02, 91.01

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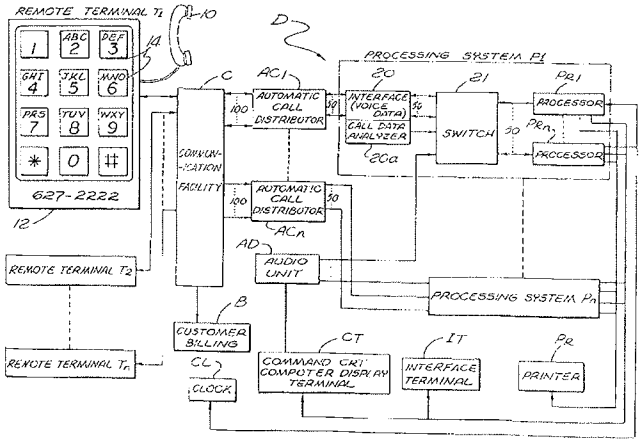
[57] **ABSTRACT**

A system D interfaces with a multiplicity of individual terminals T1–Tn of a telephone network facility C, at the terminals callers are prompted by voice-generated instructions to provide digital data that is identified for positive association with a caller and is stored for processing. The caller's identification data is confirmed using various techniques and callers may be ranked and accounted for on the basis of entitlement, sequence or demographics. Callers are assigned random designations that are stored along with statistical and identification data. A break-off control circuit may terminate the computer interface aborting to a terminal for direct communication with an operator. Real-time operation processing is an alternative to stored data. The accumulation of stored data (statistical, calling order sequence, etc.) is variously processed and correlated as with developed or established data to isolate a select group or subset of callers who can be readily identified and reliably confirmed. Different program formats variously control the processing of statistical data as for auction sales, contests, lotteries, polls, commercials and so on.

35 Claims, 6 Drawing Sheets



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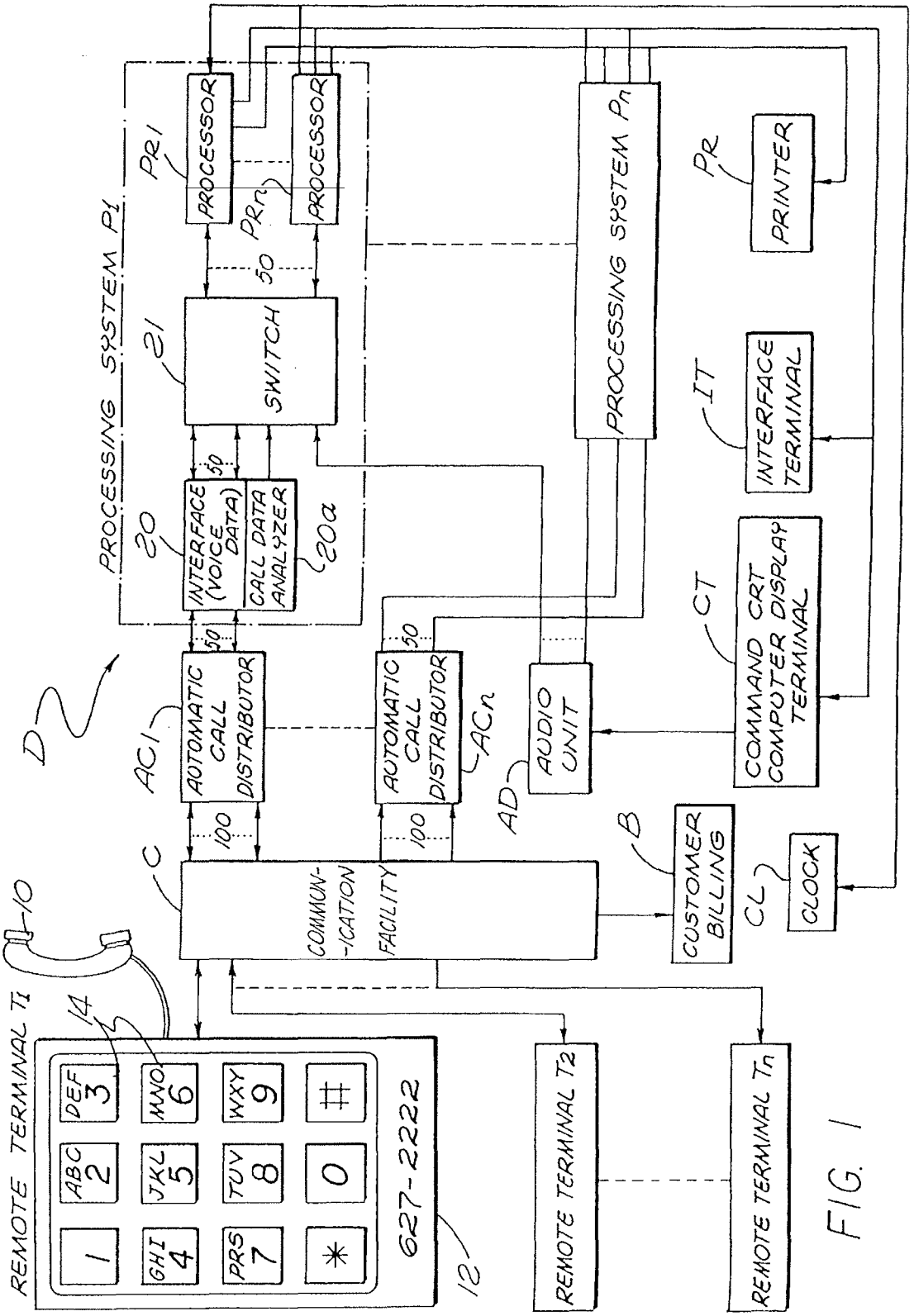

PROCESSING SYSTEM P1
PR1
PROCESSOR
PRn
PROCESSOR
50
SWITCH
21
50
INTERFACE (VOICE DATA)
CALL DATA ANALYZER
20
20a
50
50
AUTOMATIC CALL DISTRIBUTOR
AC1
AUTOMATIC CALL DISTRIBUTOR
ACn
100
100
COMMUN-ICATION FACILITY
C
D
10
REMOTE TERMINAL T1
14
1
ABC 2
DEF 3
GHI 4
JKL 5
MNO 6
PRS 7
TUV 8
WXY 9
0
627-2222
12
REMOTE TERMINAL T2
REMOTE TERMINAL Tn
PROCESSING SYSTEM Pn
AUDIO UNIT
AD
B
CUSTOMER BILLING
CL
CLOCK
PR
PRINTER
IT
INTERFACE TERMINAL
CT
COMMAND CRT COMPUTER DISPLAY TERMINAL

FIG. 1

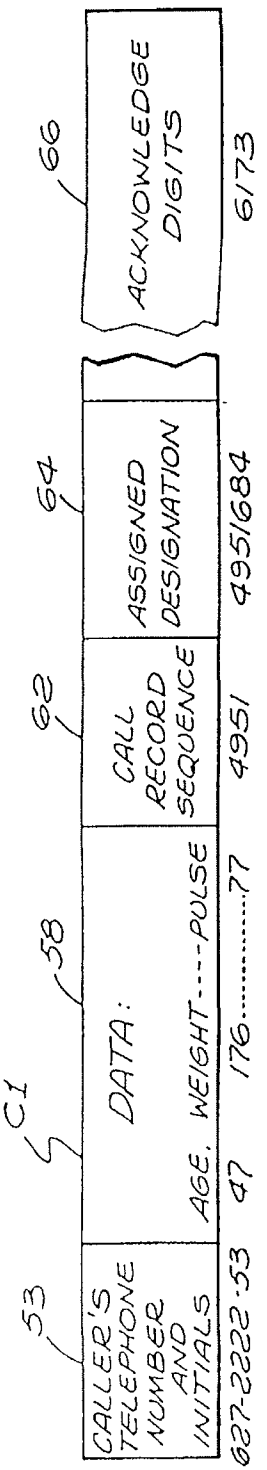


FIG. 2

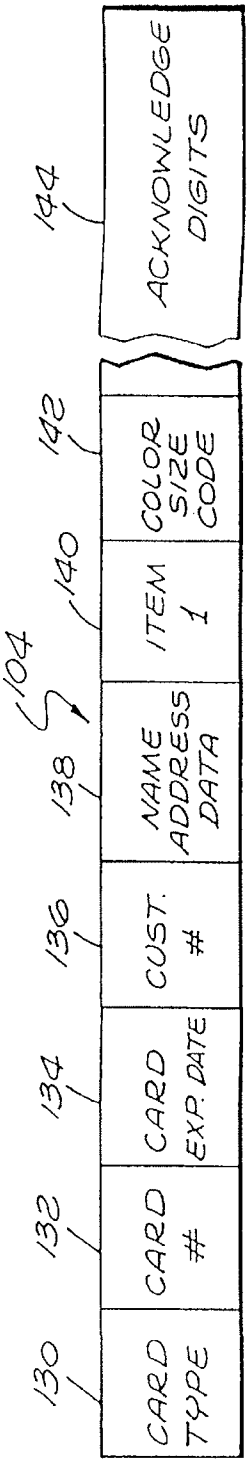


FIG. 5

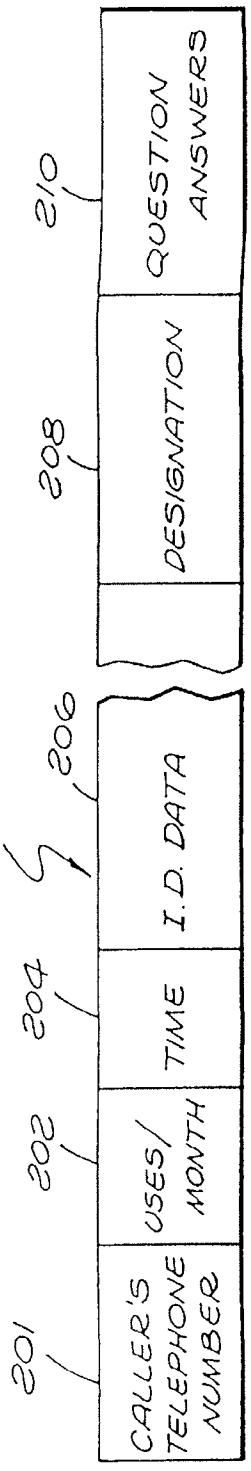


FIG. 7

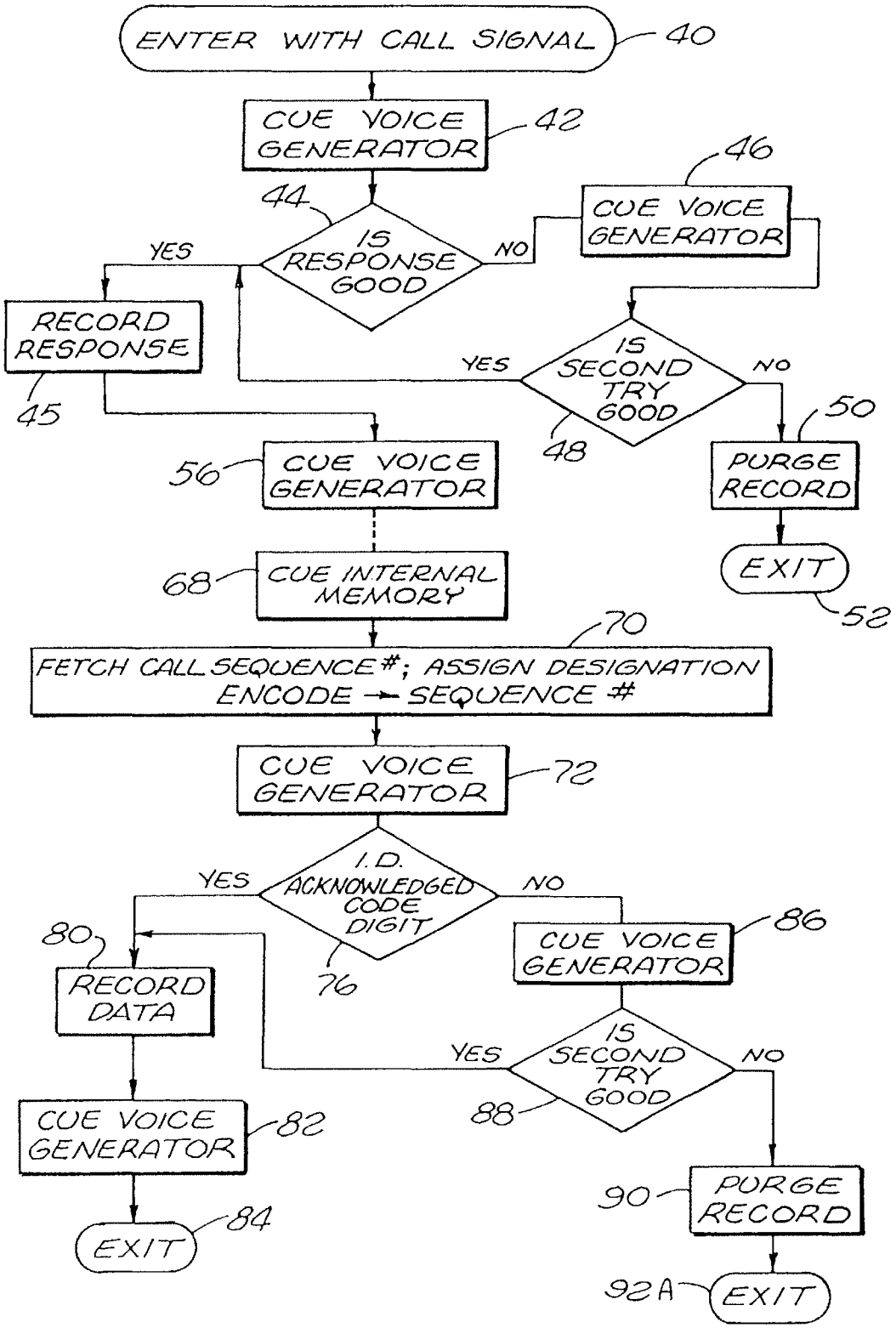

ENTER WITH CALL SIGNAL
40
CUE VOICE GENERATOR
42
44
IS RESPONSE GOOD
YES
NO
46
CUE VOICE GENERATOR
RECORD RESPONSE
45
YES
IS SECOND TRY GOOD
NO
48
50
PURGE RECORD
EXIT
52
56
CUE VOICE GENERATOR
68
CUE INTERNAL MEMORY
70
FETCH CALL SEQUENCE #; ASSIGN DESIGNATION
ENCODE → SEQUENCE #
CUE VOICE GENERATOR
72
I.D. ACKNOWLEDGED CODE DIGIT
YES
NO
76
80
RECORD DATA
86
CUE VOICE GENERATOR
YES
IS SECOND TRY GOOD
NO
88
CUE VOICE GENERATOR
82
90
PURGE RECORD
EXIT
84
92A
EXIT

FIG. 3

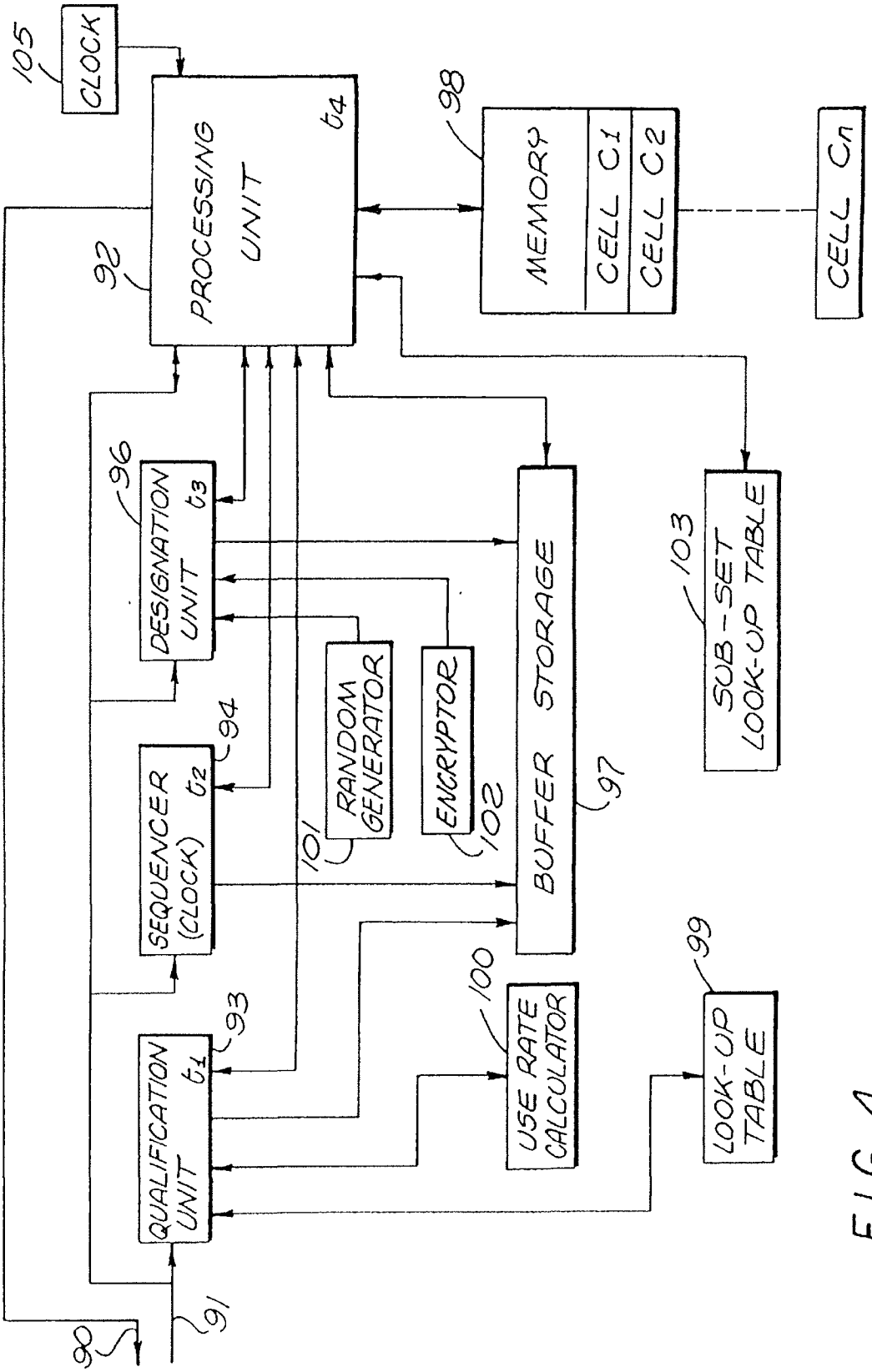

105
CLOCK
PROCESSING UNIT
t4
92
98
MEMORY
CELL C1
CELL C2
CELL Cn
96
DESIGNATION UNIT
t3
94
SEQUENCER (CLOCK)
t2
RANDOM GENERATOR
101
ENKRYPTOR
102
BUFFER STORAGE
97
103
SUB-SET LOOK-UP TABLE
93
QUALIFICATION UNIT
t1
100
USE RATE CALCULATOR
99
LOOK-UP TABLE
90
91

FIG. 4

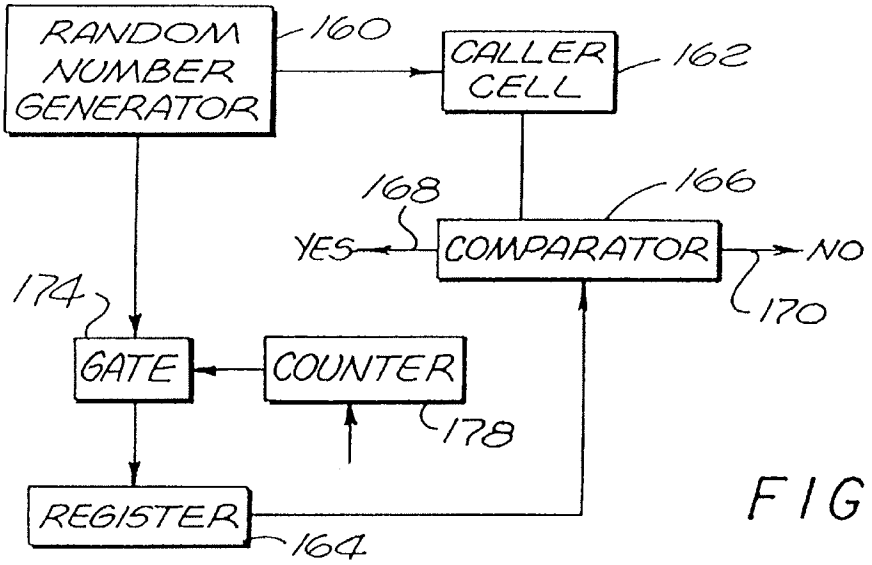
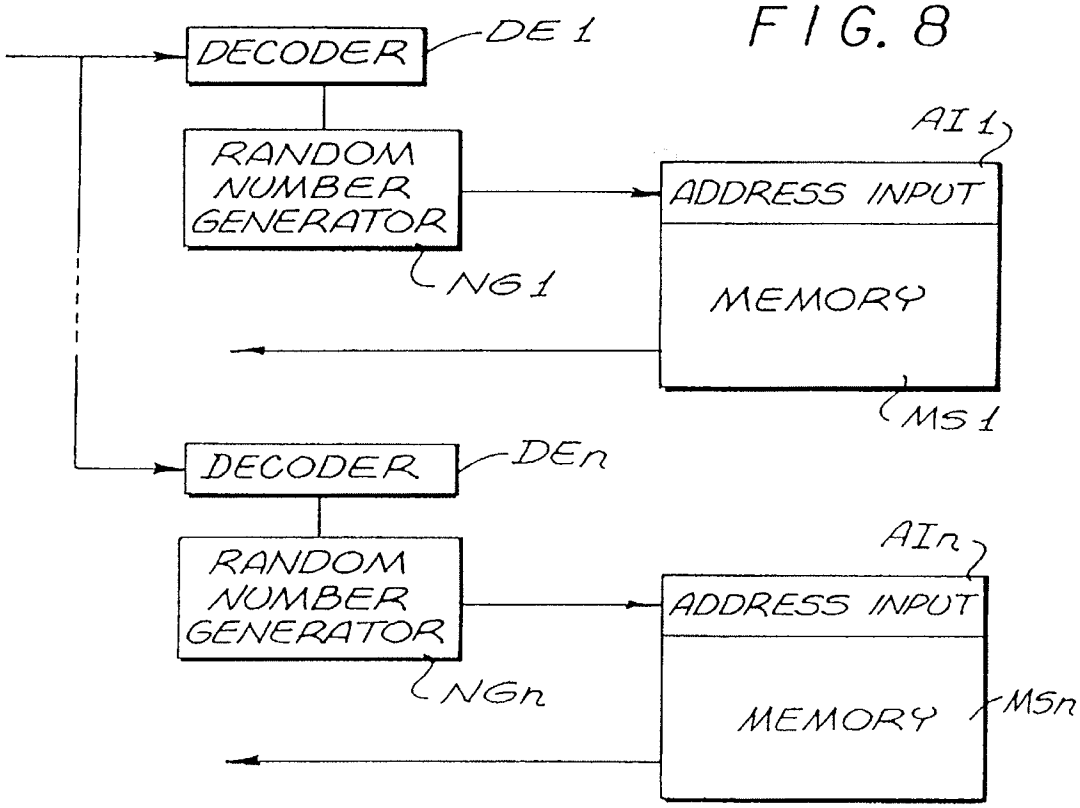

RANDOM NUMBER GENERATOR
160
CALLER CELL
162
168
166
YES
COMPARATOR
NO
170
174
GATE
COUNTER
178
REGISTER
164

FIG. 6

FIG. 8


DECODER
DE 1
RANDOM NUMBER GENERATOR
NG 1
AI 1
ADDRESS INPUT
MEMORY
MS 1
DECODER
DEn
RANDOM NUMBER GENERATOR
NGn
AIn
ADDRESS INPUT
MEMORY
MSn

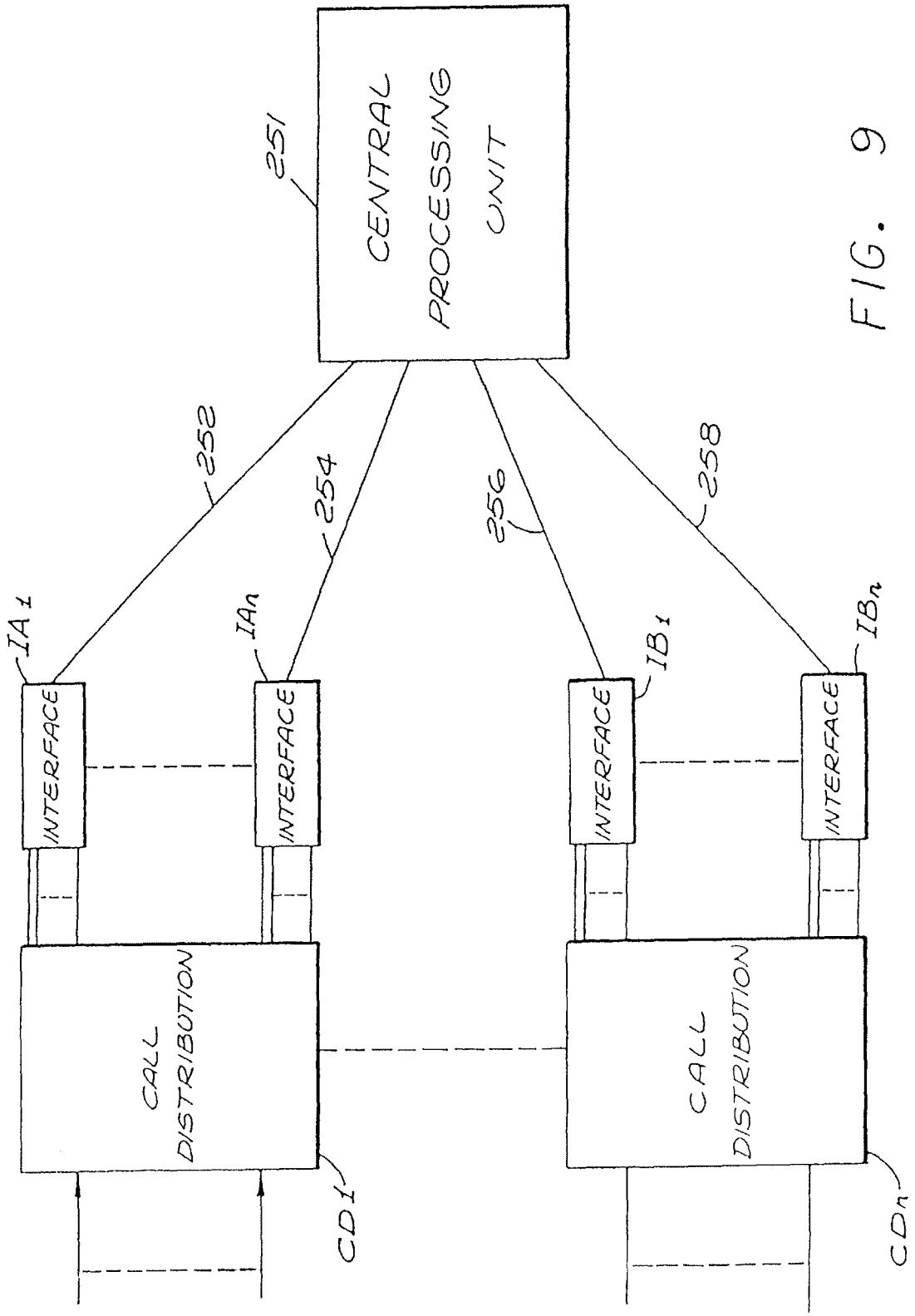

CENTRAL PROCESSING UNIT
251
252
254
256
258
IA 1
IAn
IB 1
IBn
INTERFACE
INTERFACE
INTERFACE
INTERFACE
CALL DISTRIBUTION
CALL DISTRIBUTION
CD 1
CDn

FIG. 9

TELEPHONIC-INTERFACE STATISTICAL ANALYSIS SYSTEM

BACKGROUND AND SUMMARY OF THE INVENTION

This is a continuation application of application Ser. No. 07/335,923 filed Apr. 10, 1989, and entitled "Telephonic-Interface Statistical Analysis System", which was a continuation of application Ser. No. 07/194,258 filed May 16, 1988, and entitled "Telephonic-Interface Statistical Analysis System", now U.S. Pat. No. 4,845,739, which is a continuation-in-part of application Ser. No. 07/018,244 filed Feb. 24, 1987, and entitled "Statistical Analysis System For Use With Public Communication Facility", now U.S. Pat. No. 4,792,968, which is a continuation-in-part of application Ser. No. 06/753,299 filed Jul. 10, 1985, and entitled "Statistical Analysis System For Use With Public Communication Facility" (now abandoned).

Various forms of publicly accessible communication systems for providing access to a central station have been proposed, some involving telecommunications. However, sometimes a need for ancillary functions arise in that regard, e.g. it may be desirable to positively identify a large group of persons, as a demographically controlled group, or a specifically entitled group, then statistically analyze data from the group so as to accurately identify certain persons in the group and select a subset of at least one person. Specifically, it may be desirable to obtain medical data from an entitled group of people, to correlate such data, perhaps introduce external data, then identify a select subset of the group. In that regard, a need exists for an improved, effective, economical, and expedient system of telecommunication incorporating means for performing qualification, identification, analysis and selection of individual persons.

It has been proposed to interface persons at telephone calling stations directly with a computer facility. In accordance with such arrangements, recorded voice messages prompt callers to provide data by actuating the alphanumeric buttons that are conventionally employed for dialing from one telephone station to another. In one prior arrangement, a caller may actuate dialing buttons to selectively attain a communication channel or to address specific information in a computer. In another arrangement, dialing buttons may be actuated to specify a billing designation as for requested services. Generally, such systems are believed to have been somewhat limited in scope, often involving difficulties that are frustrating or confusing to a caller. Nevertheless, such techniques have been widely used to enhance and broaden communication.

In general, the present invention comprises a telephonic-interface system and related process for selectively utilizing both analog (voice) and digital telephonic communication in a variety of different interface formats or programs, as to select or qualify a set of callers, enable positive identification of at least certain of the callers in the set, acquire data from callers in the set, statistically analyze acquired data, as in combination and in association with external data (time independent), and accordingly to isolate a subset of the callers with verifiable identification. That is, the external data (separate from caller-provided data) may be introduced at any of a variety of different times in relation to the caller data.

For example, a voice origination apparatus may prompt individual callers who (after qualification) provide select digital data to develop a record for further processing either immediately, upon the evolution of a defined set of callers or upon the establishment of select external data. Thus, following a qualification phase, the information acquisition phase may be concurrent or consecutive with respect to the processing phase. When appropriate, abort capability allows a caller to remain "off hook" and go to analog (vocal) communication. The caller then interfaces directly with an operator. For example, as disclosed in detail below, the calling number (ANI) is provided by the communication facility, and may be registered to correlate data in relation to the callers.

The system of the present invention may qualify an entitled set of callers, then receive answer data in the course of the call and develop identification or designation data, sequence data and statistical data. The system may then provide data cells for storing individual data while assigning confirmable identifications to the entitled set. From the set, a subset is defined. That is, in accordance with various formats, acquired data is processed in statistical relationship, or in relation to applied external data to accomplish such functional operating formats as an auction sale, a contest, a lottery, a poll, a merchandising operation, a game, and so on.

A variety of memory techniques are used to selectively activate the voice origination apparatus. Accordingly, statistical analysis and selection can be effectively and economically accomplished with respect to a substantial set of callers who are accommodated individual communication through a telephone system.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, which constitute a part of this specification, exemplary embodiments exhibiting various objectives and features hereof are set forth, specifically:

FIG. **1** is a block diagram of a system constructed in accordance with the present invention;

FIG. **2** is a fragmentary diagrammatic representation of a storage cell format as may be developed in the system of FIG. **1**;

FIG. **3** is a flow diagram of one operating format of the system of FIG. **1**;

FIG. **4** is a block diagram of a form of processor or function unit as may be employed in the system of FIG. **1**;

FIG. **5** is a fragmentary diagrammatic representation of a storage cell format as may be developed in the system of FIG. **1** with the processor of FIG. **4**;

FIG. **6** is a block diagram of elements in an operating function unit of FIG. **4**;

FIG. **7** is a diagrammatic representation of a storage cell format as may be developed in the system of FIG. **4**; and

FIG. **8** is a block diagram of elements in an operating function unit of FIG. **4**.

FIG. **9** is a block diagram of an alternate embodiment, showing a distributed-component arrangement of geographically spaced call distributors.

DESCRIPTION OF THE ILLUSTRATIVE EMBODIMENTS

As required, detailed illustrative embodiments of the present invention are disclosed herein. However, physical communication systems, data formats, and operating structures in accordance with the present invention may be embodied in a wide variety of forms, some of which may be quite different from those of the disclosed embodiments. Consequently, the specific structural and functional details disclosed herein are merely representative; yet in that regard,

they are deemed to afford the best embodiments for purposes of disclosure and to provide a basis for the claims herein which define the scope of the present invention.

Referring initially to FIG. **1**, a series of remote telephone-instrument terminals T1 through Tn are represented (left). The terminals are generally similar, and accordingly, only the terminal T1 is illustrated in detail.

In the disclosed embodiment, the remote terminals T1 through Tn represent the multitude of conventional telephone terminals that are coupled to a communication facility C which may take the form of a comprehensive public telephone system for interconnecting any associated terminals T1–Tn. In accordance with the present system, the terminals T1–Tn operate through the communication facility C to be coupled with a central station D, an embodiment of which is illustrated in some detail.

Generally in accordance with the present development, individual callers use the individual telephone stations T1 through Tn to interface the station D through the communication facility C. Callers may be screened or qualified. Also in accordance herewith, the data of individual callers may be collected, correlated and tested in the station D for processing in accordance with various programs and external data. As a consequence, various objectives are accomplished. For example, a select subset of the callers may be isolated and specifically identified, or related data may be processed, or transactions may be actuated. The possibilities for application of the system are substantial and varied as will be apparent from the exemplary structure and functions as described in detail below.

In one operating process format, the public might be polled with regard to locating the specific purchasers of a defective or dangerous product. Alternatively, the public might be polled with the objective of locating persons susceptible to a specific ailment or disease. Public auctions of unprecedented participation are possible. Legal lotteries are enabled that are interesting, effective and very economical on an individual participant basis. The system also might be employed in various game formats or to automate a promotion or mail-order operation, even to the extent of including inventory control as detailed below.

In each functional operating format, the callers may be variously qualified on the basis of entitlement and may be identified for subsequent verification. The callers then may be prompted, either through the interface or externally, to provide appropriate data.

Considering the system of FIG. **1** in somewhat greater detail, it is to be understood that the communication facility C has multiplexing capability for individually coupling the terminals T1–Tn to the central station D on request. In the illustrative embodiment of the system, the communication facility C comprises a public telephone network and the individual terminals T1–Tn take the various forms of existing traditional or conventional telephone instruments.

The exemplary telephone terminal T1 is represented in some detail to include a hand piece **10** (microphone and earphone) and a panel **12** provided with a rectangular array of push buttons **14** in the conventional configuration. Of course, the hand piece **10** accommodates analog signals while the panel **12** is a digital apparatus. Generally in accordance herewith, the hand piece **10** serves to manifest analog signals vocally to the caller.

In accordance with conventional telephone practice, alphabetic and numeric designations are provided on the buttons **14**. For example, several of the buttons **14** carry three letters along with a decimal digit. Specifically, the button designated with the numeral "2" also carries the letters "A", "B" and "C". In that manner, the buttons **14** encompass the numerals "0–9", two symbols, and the alphabet except for the letters "Q" and "Z". Consequently, the buttons **14** accommodate the entry of decimal data, and to some extent alphabetic data.

The buttons **14** designated with symbols "*" and "#", along with the, numeral "0", can be used by predetermined assignment to represent the letters "Q" and "Z" or any of a variety of other data or command components. Generally, in accordance herewith, the buttons **14** are employed to formulate digital data at the central station D in various formats determined by the instant specific use and operating format of the system.

Considering the central station D in somewhat greater detail, the communication facility C is coupled to interface a series of processing systems P1 through Pn (FIG. **1**, left). Specifically, the communication facility C is connected to the processing systems P1–Pn through an associated series of automatic call distributors AC1 through ACn. Each of the automatic call distributors AC1–ACn accommodates one hundred lines from the communication facility C and accordingly, may accommodate and queue up to 100 calls.

Each of the automatic call distributors AC1–ACn may take various forms as well known in the prior art, functioning to queue incoming calls for connection to a lesser number of lines. In the disclosed embodiment, from each of the call distributors AC1–ACn, fifty lines are connected respectively to the individual data processing systems P1–Pn through an interface **20** and a switch **21**. Thus, in the disclosed embodiment, each of the automatic call distributors AC1–ACn can accommodate one hundred lines, fifty of which may be active in association with one of the processing systems P.

The processing systems P1–Pn are similar, therefore, only the processing system P1 is shown in any detail. Collectively, the processing systems P1–Pn are interconnected with a command computer terminal CT, at least one interface terminal IT, at least one printer PR and an audio unit AD. The command terminal CT is separately coupled to the audio unit AD.

As represented; the processing systems P1 through Pn each contain a number of individual function units or processors PR1 through PRn. Although various other configurations and arrangements may be employed, the explanation is facilitated by including a plurality of individual function units as treated in detail below.

Considering the processing system P1, fifty lines from the automatic call distributor AC1 are connected to the interface **20**, an exemplary form of which may be a commercially available Centrum 9000 unit. The interface **20** incorporates modems, tone decoders, switching mechanisms, DNIS and ANI capability (call data analyzer **20***a*) along with voice interface capability. Note that the interface may actually perform analysis on data. However, to preserve the disclosed embodiment manageable, major analysis is explained with reference to processors.

Generally, DNIS capability is a function of the communication facility C (composite telephone system) to provide called terminal digital data indicating the called number. ANI capability is a similar function whereby the digital data indicates the calling number with calling terminal digital signals. Both capabilities are available for use with equipment as the interface **20** and to provide control through the call data analyzer **20***a*.

Accommodating up to fifty independent calls on separate communication paths to the central station D, the interface

20 is capable of providing analog (voice) signals to prompt each caller. Also accommodated are digital signals including the DNIS and ANI signals. The system contemplates the possibility of utilizing sequences of lines in rotary as well as blocking sequences of lines, the numbers for which command a particular program or operation format of a function unit as disclosed in detail below.

The interface **20** provides the connection of the fifty lines to a switch **21** which is in turn coupled to fifty function units, or processors PR1–PRn. As indicated above, multiple function units, or processors, are described in the disclosed embodiment to facilitate the explanation. Of course, non-parallel techniques and multiplexed operations might well be employed as alternatives. For a similar reason, as disclosed herein, each of the processors PR1–PRn includes memory cells for each of the callers' individual data. Development and compilation of data in such cells according to various operating formats is described below. In the disclosed embodiment, the processors PR1–PRn are connected collectively to the command computer terminal CT (incorporating a CRT display), the interface terminal IT, and the printer PR. Note that the CRT display serves to visually display data regarding select subsets as explained in detail below.

Exemplary detailed structures for the processors PR1–PRn are described below; however, in general, the units may comprise a microcomputer, for example, programmed as suggested above and as disclosed in detail below to accomplish specific operating formats. As an integral part of such formats, a caller may be qualified as belonging to an entitled set of persons or to accommodate specific demographic objectives. Also, callers may be designated both with respect to their significance and their identification. For example, callers may have different significance in a format, depending on the time or sequence of their call. Also, the designation of a caller may be exceedingly important in relation to the caller eventually being isolated as part of a subset, the members of whom must be accurately verified. As described below, the designations may involve multiple elements which may include: random number assignments, encryption techniques, utilization of calling numbers, identification data, sequence of call and so on to facilitate reliable verification. Note that the communication facility C has a customer billing structure B that is interfaced by the system.

On the qualification and designation of callers, the system enters a data accumulation phase during which digital data (formatted at one of the telephone terminals T1–Tn) is processed by one of the processors PR1–PRn. In general, the processing evolves a subset (at least one caller) the members of which may be verified and confirmed.

Either during the data accumulation phase, or after the processing phase to isolate a subset, a distinct operation may involve actuating the interface terminal T1 for direct local communication between the caller and an operator at the terminal T1. Another distinct operation may involve actuation of the printer PR to provide documents in relation to the operating format, as for providing award certificates as for verifying members of an isolated subset. Also, charge slips may be generated containing at least part of the data of a particular transaction.

An appreciation of the philosophical operation of a system in accordance with the present invention may now be enhanced by considering an exemplary operation of the illustrative embodiment of FIG. **1** to isolate a subset of people who are susceptible to a particular disease or infirmity. The exemplary operation might involve a geographical-area, as a large city or population center, in which a particular health problem is somewhat acute. For example, a major population center might be polled where coronary artery disease is a significant problem. Accordingly, persons most susceptible to such disease could be identified for corrective recommendations.

People of the population center could be informed of the availability of a service for statistical health analysis. Accordingly, persons interested in their individual statistical situation would be motivated to utilize the service. Specifically, individual callers would use the remote terminals T1–Tn to contact the central station D through the communication facility C and thereby provide personal information that would enable a statistical analysis in relation to existing data so as to isolate and inform (either real time or batch basis) those persons statistically most likely to be in need of corrective measures. In such applications, it may be important that the caller's identity be subject to reliable verification. Other applications or programs also may present a critical need for positively verifiable identification to the extent that credit card numbers and/or personal identification numbers may be employed.

An exemplary operation of the system, with regard to a specific caller, will now be treated referring somewhat concurrently to FIGS. **1**, **2** and **3**. As indicated above, FIG. **2** indicates a data storage format for a memory cell in an exemplary processor PR and now will be considered with regard to an operating format in which data is composed for a caller. Pursuing the above example, assume the existence of a caller at the remote terminal T1 (telephone number (213) 627-2222) who wishes to pursue health-related information on the basis of statistical analysis. The caller lifts the hand piece **10** and in accordance with conventional techniques actuates the push buttons **14** to call for a select operating format, e.g. telephone number (213) 627-3333 and thereby establish communication through the facility C with a designated function unit in the central station D. Receiving the call signal, the automatic call distributor AC1 associates the called number ((213) 627-3333, rendered available using standard telephone DNIS techniques) through the interface **20** and the switch **21** to attain connection with the specific processor, e.g. the processor PR1 formatting the health-related program. Accordingly, the processor PR1 cooperates with the interface **20** to cue the interface **20** to operate as a voice generator.

The sequence of operations is represented to be initiated in FIG. **3** by the "enter" block **40** which is accordingly followed by a "cue voice generator" command block **42**. If the ANI equipment is not employed, the voice generator in the interface **20** formulates speech, a representative form of which might be: "Thank you for participating in the coronary artery disease statistical analysis. Please give us your telephone number by actuating the call buttons on your telephone instrument."Acting on the instructions, the caller would push the buttons **14** in sequence to indicate his telephone number, e.g. "(213) 627-2222". Alternatively, the interface **20** can accept the calling number ((213) 627-2222) according to its provision by standard ANI equipment of the communication facility C.

The resulting data signals are communicated from the interface unit **20** (FIG. **1**) to the processor PR1 for testing the telephone number as valid or entitled. Essentially, the format of a proper number prompts production of a valid or "good" signal. The test is indicated by the block **44** (FIG. **3**). If the response is not valid or entitled, for example contains an inappropriate number of digits or has been used to a point of

excess, the operation of block **46** is initiated again cuing the voice generator **30** (FIG. **1**). The voice generator accordingly instructs the caller, e.g.: "You have not entered a proper telephone number. Please reenter your telephone number by pressing the appropriate call buttons." The caller is then allotted a predetermined period of time to make a proper entry with the consequence that the system moves to a test operation as indicated by the block **48** (FIG. **3**). Specifically, block **48** poses the query: "Is the second try good?"

If the caller is again unsuccessful, the system purges the record as indicated by the block **50** and the call is terminated as indicated by the block **52**. In an alternative mode, the processor PR1 may abort the interface and couple the interface terminal IT for direct personal communication with the caller. The interchange would then proceed, person-to-person.

If the caller responds with a proper telephone number, the operation proceeds. Specifically, the system sequences to record the response of the proper telephone number as indicated by the block **45**. That is, the caller's telephone number is recorded in an assigned specific memory cell identified with the caller. The format of the cell C1 is indicated in FIG. **2**. The first portion, section **53**, contains a form of identification data, i.e., the caller's telephone number, i.e. "(213) 627-2222".

Note that as explained above, if the second attempt to formulate a proper number is successful, as manifest by the block **40** (FIG. **3**), the response is recorded at that stage. In either case, exiting from the block **54** (FIG. **3**) invokes the next operation of again queuing the voice generator as indicated by the block **56**.

As an alternative format, if a selective-group polling operation is performed, or callers are otherwise to be cleared for entitlement as mentioned above, a caller may be qualified by providing a "one-time" key number. The processor PR1 may incorporate a look-up table for proper key numbers which numbers may be coded using any of a wide variety of techniques. As a simple illustrative example, the key may comprise a precise number of digits that always total a particular numerical value.

The system proceeds after the caller is qualified. Specifically, the cue to the voice generator of the interface **20** (FIG. **1**) as represented by the block **56** produces a request for further information from the caller with further identification data and answer data. For example, the voice generator might request information by stating: "Please use the telephone buttons to indicate initials of your name."The detailed operation is not represented in FIG. **3** as it is similar to the operation illustrated by the blocks **42** through **54**. However, again, a proper response is registered in the storage cell C1 as illustrated in FIG. **2** by the number "**53**" also registered in the first section **53** of the cell.

The cycle of obtaining digital information from the caller next is repeated with respect to answer data, i.e. specific health data. For example, as illustrated in FIG. **2**, the next section **58** in the cell Cl receives an accumulation of health data, including the caller's age, weight, . . . , pulse rate, and so on. Representative digital numbers are illustrated in FIG. **2**.

During the course of the telephonic communication, the processor PR1 formulates identification data for the caller specifically including: the chronological sequence of the call, the assigned designation of the call, and a set of acknowledgment digits for the call. Such data identification is registered in the caller's assigned cell C1 in accordance with the format of FIG. **2** being stored in sections **62**, **64** and **66**. Note that the data may be stored in a coded interrelationship. For example, the acknowledgment digits may be related to the call record sequence. In the illustrative example, the chronological order number of the caller is 4951. The acknowledge digits may be derived from the sequence number. For example, as illustrated, a coded relationship may be established by adding "two" to each of the individual record sequence digits. Considering the example numerically:

Adding without propagated carries:

$$\begin{array}{r} 4951 \\ 2222 \\ \hline 6173 \end{array}$$

Note that the confirmation data as acknowledgement digits can be extremely important, as to communicate with an isolated member of a subset. For example, identification could be published or circulated, as by a television broadcast, then respondents checked by use of confirmation data that may be confidential.

Continuing with the above example, the call chronological sequence registered for the caller is 4951 as represented in the section **62** while the acknowledge digits are 6173 as registered in the section **66**. Additionally, the processor PR1 develops an assigned designation number, e.g. designation "4951684", which is registered in the section **64**, the acknowledge code or digits, e.g. 6173, being registered in the section **66**. These values are formulated in accordance with conventional number techniques during the data acquisition phase. With the exemplary numerals formulated, the operation proceeds.

The processor PR1 (FIG. **1**) cues the internal memory. That operation is indicated by the block **68** (FIG. **3**). Thus, the processor PR1 fetches the call record sequence number, assigns a designation (if not previously assigned), and encodes the sequence number as the acknowledgment digits (if not previously accomplished). These operations are indicated by the block **70** (FIG. **3**).

Next, the processor PR1 (FIG. **1**) cues the voice generator in the interface **20**, as indicated by the block **72** (FIG. **3**) to provide information to the caller. Specifically, for example, the voice generator in the interface **20** (FIG. **1**) might signal: "This transaction has been designated by the number 4951684, and is further identified by the acknowledgment digits 6173. Please make a record of these numbers as they will be repeated. Specifically, the designation number is 4951684. The acknowledgment digits are 6173. Please acknowledge this transaction by pressing your telephone buttons to indicate the acknowledge digits 6173." In various applications as those involving security, the order and acknowledgment of callers may be very important. Therefore, data for confirmation associated with the order is important.

The system next proceeds to the test mode as indicated by the block **76** (FIG. **3**). If the caller provides the correct acknowledgment digits, the data is confirmed in the record as indicated by the block **80** and is registered in the cell Cl (FIG. **2**). Additionally, the voice generator is sequenced as indicated by the block **82** (FIG. **3**) to indicate the close of the communication and that the transaction is terminated as represented by the exit block **84**.

In the event that a caller cannot confirm his acknowledgment digits, as indicated by the block **76**, a repeat operation is performed as indicated respectively by the blocks **86** and **88**. Specifically, the voice generator is queued for a second instructional message. In the event that the second attempt

also fails, the data is purged and the call discounted as indicated by block **90** and an exit block **92**. If the second try is successful (test block **88**), as indicated by the block **80**, the record is perfected as indicated above.

As a result of the likelihood of a large number of calls, as described above, data cells in the processors PR1–PRn (FIG. **1**) are developed with specific information indicative of a statistical sampling of the populace of concern. The data of that statistical sampling may be self-generating of specific conclusions with respect to a subset of individuals, and/or supplemental data to clearly manifest a significant subset. For example, the data may indicate a significant departure from an assumed normal characteristic. Such data, accumulated from the polling may be considered by logic comparisons in the computer **22** to select the subset of persons who should be isolated.

In addition to the self-generating conclusions available from the received data, the system may involve the introduction of external data. In the physical fitness example, such external data might take the form of national statistical data. In any event, the processing operation usually involves comparison testing which compares caller data from individual memory cells of the processors P1–Pn (FIG. **1**) with test data that is supplied through the command terminal CT.

In the above example, members of the public in general were invited to use the service. A number of alternatives exist which might well impact on the statistical analysis. For example, a list may be preserved by a use-rate calculator to implement a consumable key operation. That is, a user is qualified to a specific limited number of uses during a defined interval.

As another example, callers might be restricted to the purchasers of a specific product as a medical apparatus for measuring blood pressures, heart rates, or so on. In such situations, it will be apparent that the statistical data will be somewhat distorted from an average or normal sampling. Clearly, the processors P1–Pn can be programmed to take into account such considerations. In that regard, the processors might also verify identification data proffered by a caller. Such data might take the form of a credit card number or a personal identification number. Methods for verification of such numbers using computer techniques are discussed below.

As indicated above and detailed below, the system can be programmed or formatted for use in a variety of applications. Preliminary to considering exemplary forms of such applications, reference will now be made to FIG. **4** showing an exemplary structural form for the processors PR1–PRn. From the switch **21** (FIG. **1**) a pair of communication lines **90** and **91** are indicated in FIG. **4** (top left). The line **90** provides signals from a processing unit **92** while the line **91** provides signals to the processing unit **92** along with other components as represented in FIG. **4**. The separate lines **90** and **92** facilitate explanation.

The processing unit **92** may take the form of a minicomputer programmed to accommodate the functions of various applications, as disclosed in detail below. As indicated above, the system may utilize a plurality of independent function units or processing units, e.g., processing unit **92**, operating in a somewhat parallel configuration, or alternatively, a limited number of processors may be driven sequentially to accommodate the functional operations as described.

The input line **91** (upper left) is connected specifically to a qualification unit **93**, a sequencer **94** and a designation unit **96**, as well as the processing unit **92** as indicated above. The qualification unit qualifies access from a remote terminal T1–Tn to the processing unit **92** as described in detail below. In accordance with various applications or operating formats, the qualification unit **93**, the sequencer **94** and the designation unit **96** operate preliminarily with respect to individual callers. Generally, these units qualify or test callers for entitlement, develop a sequence-of-calls record and provide forms of designations for callers that may be authenticated. As described in detail below, the units function in sequence to accomplish such operations and accordingly are each individually connected to the processing unit **92** and a buffer storage **97**. Essentially, the buffer storage **97** is illustrated separately from the processing unit **92** along with the unit **93**, sequencer **94**, unit **96**, and so on, again in order to facilitate the explanation. Similarly illustrated are a memory **98** (with cells C1–Cn), a look-up table **103** and a clock **105**.

Considering the processor of FIG. **4** in further detail, the qualification unit **93** (upper left) is connected to a look-up table **99** and a use-rate calculator **100**. The designation unit **96** (top center) is connected to a random number generator **101** and an encryptor **102**.

In view of the above structural description of the system, consideration will now be given to certain specific applications in relation to the operation of the system. In that regard, the operation of the system will next be considered to automate a mail-order facility.

Assume that a caller at a terminal T1 (FIG. **1**) dials a specific number to identify a mail order interface with the system of FIG. **1**. For example, assume the telephone number "(213) 627-4444" for such an interface. Accordingly the caller dials the number at the remote terminal T1. As a result, the communication facility C couples the terminal T1 through the automatic call distributor AC1, the interface **20** and the switch **21** to a select processor PR1 identified and programmed for a mail-order operating format. Note that the communication facility C provides the dialed number ("(213) 627-4444") to the processing system P1 through well known telephonic equipment DNIS. Accordingly, a program is selected to execute the mail order interface.

As a preliminary action, a voice responder in the interface **20** might be cued by the processing unit to identify the mail-order house and indicate that the order will be taken by computer. Either before or after qualification, the caller might be advised that if he prefers to communicate directly with a person, or needs such contact at any point in the communication, he may accomplish it simply by pushing the asterisk button (*) at the terminal T1. Such action forms an abort signal that is detected by the processing unit **92** to transfer the communication to the interface terminal IT (FIG. **1**). Alternatively, the customer may be asked (by voice cue) to provide detailed information as name, address, etc. which is recorded for later processing.

After the preliminary information is supplied to a caller, the qualification phase is initiated. For example, the interface **20** might actuate the terminal T1 to announce: "Please indicate the type of credit card you will use for your purchase by pushing the button number 'one' for Mastercharge, 'two' for . . . . "

The caller's response, indicating a specific credit card, will be stored in a data cell; however, the data is developed initially in the buffer **97**. The format and data for the present example (in the buffer **97**) will be explained with reference to a storage block format **104** as illustrated in FIG. **5**. The first data block **130** accordingly registers a digit to indicate the card that will be used to support the caller's purchase.

Using voice prompt, the interface **20** next instructs the caller to use the telephone buttons to indicate his credit card

number and the expiration date of the card. That data is stored in the register **104**, specifically in the blocks **132** and **134** as illustrated in FIG. **5**.

Next, the caller is asked for his customer number, as it may appear on his catalog. That number is stored in a block **136** of the block format register **104**. Note that the caller may not be identified in the files of the mail-order house and in that event, the operation may be shifted to a manual operation to be continued through the interface terminal IT (FIG. **1**) as explained above. For a television-initiated mail-order transaction, other numerical codes might be employed as to key into broadcast schedules. For example, a code might be used to indicate program times and thereby enable evaluation of the productivity of such program times. Such operation may be performed during the designation phase as described below.

To continue with the explanation of the automated format, assume that the customer has a file customer number and that it is stored in the block format register **104** along with his credit card number and expiration date. From that location, the data is checked by the qualification unit **93** (FIG. **4**) for propriety as part of the test or qualification phase of operation. The check or test is in two stages and both are performed during an interval designated t**1**, the qualification unit **93** operating under control of the processing unit **92**.

First, the data is verified as representing valid and proper data formats for the customer's number, the credit card number and expiration date. The second operation involves consulting a so-called negative list to assure that the identified card and customer's number have not been cancelled, as for example in the case of credit cards that have been lost or stolen. Detailed structure for such tests is described in the parent case from which this case continues and may be incorporated in the qualification unit **93**.

With the successful completion and verification of the preliminary data in the block format register **104**, the qualification phase of operation is concluded and the system next interfaces with the caller to acquire and process data for a specific order of merchandise. Note that in the mail-order operating format, the sequence of the call is not normally significant. However, the sequencer **94** may log the time during a period t**2** if deemed worthwhile.

Somewhat as described above in relation to the initial operating format (health poll), the voice generator in the interface **20** prompts the caller through a series of exchanges that load the storage block format register **104** with a merchandise order. Thus, as purchase items are confirmed, the register **104** is loaded as exemplified by the blocks **140** and **142**. The interchange continues until the customer indicates he does not wish to order any additional items. The system then operates the designation unit **96** (FIG. **4**) during the interval t**3** to develop and announce the acknowledgement digits as stored in the block **144** (FIG. **5**). The acknowledgement digits serve to identify the order both for the caller and the mail-order house. Accordingly, tracing is facilitated. The data (FIG. **5**) is then transferred from the buffer **97** (FIG. **4**) to a select memory cell C1–Cn.

During the next interval t**4**, the processing unit **92** (FIG. **4**) isolates data of the cells C1–Cn to facilitate the mail-order process. In that regard, the processor **92** may incorporate structure and processing techniques as disclosed in the parent case.

Of the wide variety of other operating formats and applications in accordance herewith, further examples will now be described with reference to the systems of FIGS. **1** and **4**. However, from a consideration of the operating formats treated below, it will be apparent that certain structural elements have reoccurring significance in the combination. Specifically, such elements include the structures: (1) utilizing the called number to select a specific operating format, (2) for screening or selecting callers who will be accepted based on various criteria, (3) for designating callers in a manner to enable subsequent positive identification and (4) various processing aspects of the data manipulations including the provision of at least a portion of certain ID data provided directly from the telephone apparatus. With respect to the data processing, distinctive elemental features include the utilization of external data not available during the interval of gathering data, the utilization of an interrelationship between the composite data collected during a data acquisition period, and the operation of utilizing time or sequence of callers to accomplish a subset.

As the next illustrative operating format, an instant lottery system will be described. Accordingly, assume the existence of a legalized state lottery accommodated by the telephone system utilizing a pay-to-dial number ("(213) 976-xxxx") and restricted to a limited number of uses for defined intervals of time. For example, a person might be entitled to play the lottery a limited number of times or to the extent of a limited dollar value during a predetermined interval.

From the terminal T**1** (FIG. **1**) the caller would actuate the push buttons **14** to establish contact with the processing system P**1** coupling would be through the communication facility C, the automatic call distributor AC**1**, the interface **20** and the switch **21** as described in detail above. The initial operation then involves qualification of the caller to participate in the instant winner lottery. Again, ANI or caller interface techniques may be employed. If the caller is involved, the interface **20** is actuated by the qualification unit **93** during the operating interval t**1** to instruct the caller: "Please key in your telephone calling number". As indicated above, an alternative involves the system simply registering the calling number on the basis of its provision by ANI equipment.

In any event, after the caller's telephone number is registered, the instruction is given: "Participation in instant winner lottery is for persons over twenty-one years of age. Accordingly, please key in the year of your birth". A driver's license or credit card number may be similarly registered to confirm age. Alternatively, the combination of telephone number and date of birth could be used. In any event, the caller's data is registered and the qualification unit **93** then functions to test the data as provided. Specifically, the caller's telephone number is checked in a look-up table **99** to determine whether or not it is a proper and currently valid number for use in the lottery. Concurrently, the number is checked by the use-rate calculator to determine the number of times it has been used in excess of a predetermined number of calls or dollar value to participate in the lottery during a current interval of monitoring.

If the data indicates a qualified caller, the system proceeds to the next phase of designating the transaction. Note that the sequence is not significant in this operating format with the consequence that the interval t**2** and the operation of the sequencer **94** may be bypassed. Rather, the designation unit **96** operates during the interval t**3** to provide the caller with a designation for the current transaction and if applicable, updates the file as to current use or dollar value remaining for the caller's use. As explained above, the random generator **101** with or without the encryptor **102** may be employed to create an identification number which may include an encrypted form of the caller's telephone number. Accordingly, data for the transaction is established in the buffer **97** then set in a cell of the memory **98** (FIG. **4**).

Specifically, the completed data cell format might be as follows: Telephone No.-Birth Year-Designation-Random No.

The system next functions to generate the random number as indicated above which will then be tested against a series of other numbers to determine whether or not the caller is a winner. In that regard, elements in the processing unit **92** which accomplish the operation are illustrated in FIG. **6** which will now be considered in detail.

A random number generator **160** functions on command to provide a three-digit number. With the consummation of a call, the random number generator **160** is actuated to provide the caller's random number in a selected caller cell **162**. From that location, the caller's random number is compared with numbers from a register **164** by a comparator **166**. The numbers in the register **164** were previously passed through a gate **174** from the generator **160**. In the event of coincidence, the comparator provides an output "yes" signal to a line **168**. Conversely, the failure of coincidence prompts the comparator **166** to provide a "no" output to a line **170**. Essentially, a "yes" indicates a win while a "no" indicates the caller has lost.

The elements of FIG. **6** provide a random operating format to determine winners on a somewhat statistical basis; however, the system increases the probability with the passage of time when no win occurs. In that regard, at the outset of an operating cycle, the random number generator **160** provides a random number that is passed through the gate **174** to the register **164**. In the exemplary format, a three-digit number would be provided. At that stage, the caller's random number, from the cell **162**, would be compared with the single number in the register **164** by the comparator **166**. However, with the passage of time, calls are tallied or time is metered by a counter **178**. Accordingly, upon the attainment of a predetermined count, the gate **174** is again qualified to enter another number in the register **164**. Accordingly, an increasing set of numbers are held in the register **164** for comparison with each caller's number. Of course, the more numbers in the register **164**, the higher probability of a caller winning and that relationship depends upon the duration or number of calls since the last winner.

Either a win or a loss as indicated within the processing unit **92** (FIG. **4**) prompts the interface **20** to respond appropriately to the caller announcing his results. If there is a win, the designation may be reinforced and additional identification may be taken as explained above. Of course, if the prize simply involves a credit on the caller's telephone bill or his credit account, identification and designation become less critical considerations.

In the event of substantial awards to be claimed, the processing system P1 (FIG. **1**) may actuate the printer PR to produce a positive identification of the winner, which document may be redeemed only by the caller providing the assigned designation along with confirmation of his identification data.

Generally in relation to awards, the processing unit **92** may also utilize a random number format for determining the significance of awards. That is, a random number may be actuated to provide numerals from one through twenty, for example, the magnitude of the number generated for a caller indicating the significance of his award. Normally such information would be provided to the caller and registered in his memory cell.

With respect to memory cells generally, it is to be noted that actuated memory cells may be cleared for callers who are not winners. Accordingly, a limited number of memory cells store the subset of winners for subsequent confirmation processing and so on.

As another operating process format in accordance with the present invention, consider an auction sale. As disclosed herein, the auction format is associated with television as, for example, in the form of a cable channel for dedicated use during an interval of an auction sale.

Preliminarily, in accordance with the disclosed exemplary format, persons wishing to participate in the auction sale would make preliminary arrangements involving utilization of the system to establish authorization data for qualified bidders in cells C1–Cn of the memory **98** (FIG. **4**). In an alternative format, the bidders could simply be qualified immediately before bidding, as on the basis of a charge-card number or other identification.

Generally, it is contemplated that callers are coupled into the system only during the bidding on specific items of merchandise. Accordingly, some prequalification may be desirable to facilitate the rapid accumulation of a bidding group with the introduction of a unit of merchandise.

In accordance with the disclosed format, an auctioneer conducts the sale in a somewhat traditional manner, recognizing that he is interfacing a relatively large audience through the system of the present invention and with a television connection. Specifically, the auctioneer is cued as to audience reaction by a monitor incorporated in the command computer terminal CT (FIG. **1**). Essentially, the auctioneer is given an abstract or summary of the relative bidding as the auction progresses In one format, the caller sees the auction on a television receiver. That is, the monitor may be covered by a television camera to inform the audience and particularly interested bidders. Consider the detailed steps of the operation.

As the auctioneer announces the next item for sale, it is televised to potentially interested bidders. In addition to being informed of the merchandise, potential bidders might also be reminded of the telephone number for participating in the auction. Accordingly, any interested person at a remote terminal T1–Tn may dial the auction number and obtain access to the processing systems P1–Pn. The caller would have a television set available, tuned for example to a cable channel.

Any preliminary qualification as indicated above will then be performed along with any appropriate designation. With regard to the designation, unless callers are identified as part of the qualification step, the designation unit **96** (FIG. **4**) assigns a limited-digit number to individual callers for use by the auctioneer interfacing the command computer and terminal CT. Further designation and sequencing as disclosed herein also constitute part of the process. To the extent that qualification and designation operations may be performed, the operations are performed as described above with reference to FIG. **4** by the qualification unit **93** and the designation unit **96**. Of course, any of the safeguards and limitations as described herein may be employed as deemed appropriate for an auction format.

After the preliminaries, the auctioneer initiates the bidding with respect to a particular item that is observed by the callers on a television receiver as through a cable channel. Note that the audio may be variously coordinated through the telephone communication facility C and the audio channel of the caller's television. In a simple format, after an introductory phase, communication to callers with respect to the bidding is provided through the television link. Alternatively, the audio unit AD (FIG. **1**) may be employed.

Essentially, the auctioneer initiates the bidding by stating an initial value for the opening bid. Callers are invited to bid by actuating the push buttons **14** (FIG. **1**). For example, the auctioneer may invite an initial bid of one hundred dollars

asking callers to so bid by entering an asterisk (*) by punching the button so designated. In accordance with one operating format, cells in the memory **98** (FIG. **4**) are actuated to register the bidding number in identified relationship with several calls. Note that although a record may be desirable, it is not usually necessary to record all bids, particularly at initial bidding figures. In any event, the individual processing units, e.g. unit **92** in individual processors PR1–PRn are interconnected (FIG. **1**) and operate to select the final and key bids.

After attaining the initial bid, the auctioneer may invite further bidding by seeking a bid of two hundred dollars or any bid. Such a bid might be accomplished either by punching the asterisk button to attain the solicited bid, or by using number buttons to enter a different bid, e.g. two hundred fifty by buttons "2", "5" and "0". Again, cells of the memory **98** are actuated to record select bids (sequence) at the higher value.

The status of the bidding is presented to the auctioneer by the monitor of the command computer terminal CT (FIG. **1**). Specifically, the auctioneer is provided an indication of the number of bidders at each level. If a sizeable number of callers bid at a specific value, the auctioneer may wish to advance the price significantly for the next round of bidding. Thus, the auctioneer proceeds until a small group of remaining callers are addressed. Note that the display of the command terminal CT (FIG. **1**) may also inform the auctioneer of fresh bidders.

As the selection process proceeds, signals from the clock CL (FIG. **1**) are introduced to indicate the sequence of bidders. For example, assume the bidding has proceeded to a stage where only three bidders remain active. The auctioneer is informed by the command terminal CT of the order in which the callers made their bids. The sequence is also of record in the cells of the memory **78** (FIG. **4**) to indicate the sequence in the event that the final bid involves more than one caller. Of course, the first caller to respond with a bid would have priority in the purchase.

Normally at the conclusion of the bidding on a particular item, the contents of the cells in the memory **98** would be purged with only the final bidders being held in general memory within the processing unit **92**. Of course, it is important to maintain a record of back-up bidders in the event the sale is not consummated with respect to the first of the highest bidders. That is, a subset of the highest bidders is preserved for each item of merchandise in the event that the highest bidder fails to qualify or the sale otherwise cannot be consummated. Of course, a distinct advantage of the system is the ability to accommodate a vast auction participation group for items of substantial value and as a consequence the distillation of a subset of callers is exceedingly valuable information.

To consider another operating format in association with the television media, a system will now be described whereby television viewers participate on a real-time basis in a game show for prizes. The ability to involve television viewers in a program has the potential of expanding program interest along with the expanded participation.

Game shows in accordance herewith may take any of a wide variety of forms as several well known programs in which studio contestants compete for prizes. In utilizing the system of the present invention to involve remote participants, it may be desirable to preliminarily qualify and designate callers as explained above. Specifically, prior to participating in an actual game show, interested participants interface the system as depicted in FIG. **1**, and in the course of an exchange as described above, the qualification unit **93** and the designation unit **96** cooperate with the processing unit **92** to accomplish preliminary data on potential participants in cells of the memory **96**.

Various games will involve different screening processes and clearances. For example, a child's television game format may require parental clearance and in that regard written communication may be required for approvals. Such approval may require the assignment of a personal identification number to the child player as qualifying identification data.

As explained above, clearances may be perfected through the look-up table **99** (FIG. **4**) in association with the qualification unit **93** or approvals through a consumable key step may be extended to incorporate functions of the processing unit **92** in association with the memory **98**. For example, if qualification simply involves a check-off operation, the look-up table **99** will normally be employed. However, in the case of preregistration for a participant, as in the case of the auction sale, the memory **98** is involved with the qualification unit **93** through the processing unit **92** to establish a data cell C1–Cn for each qualified participant. Thus, each potential participant to be qualified interfaces with the processing unit **92** during a preliminary interval of operation to provide data in one of the cells C1–CN to facilitate qualification for participation during a real-time game show.

At the time of the show, callers are qualified simply by reference to their assigned memory cell data for a verification. Thereafter, the caller's exchange information to supplement their data as with respect to the play which follows. Specifically for example, a caller might select a studio audience participant with whom the caller is to be allied. The interface operation may be essentially as described above wherein a voice generator in the interface **20** (FIG. **1**) provides signals which activate the remote telephone unit to speak the instruction: "If you wish to play with Player No. 1, please push button No. 1; if you wish to play with Player No. 2, please push button No. 2 . . . and so on". The caller may also be instructed to indicate the extent of a wager. For example, "Push the number button indicating the points you wish to risk".

The participant data is stored in an assigned cell of the memory **98** (FIG. **4**) for the caller and as the game proceeds, the processing unit **92** tallies the caller's score. Scores are interrelated between individual processing units to actuate the terminal CT. Thus, individual accounting occurs for each of the calling participants on an on-line basis dependent upon the success of the studio players and their association with the callers. On-going accounting data may be provided at intervals or real time by the recorded voice to each contestant.

According to the described format, after an interval of play, the processing units, as the unit **92** (FIG. **4**), operate to isolate a subset of caller-players who have amassed the highest scores. Of course, various arrangements may be provided for awarding prizes to the select subset of winning callers.

The above format involves a real-time game show with an on-line operating format. A somewhat similar format involves nonreal-time operation and in that sense, callers may interface with the system of the present invention before and after the show; however, not primarily during the show. Such a show might involve a quiz for callers based on their ability to perceive and remember occurrences within the show. Preregistration may be employed, however, is not essential. Rather, callers may call after the broadcast of a program. In that event, sequence or time clocking may be

very important to limit or control individual interfaces to a specific time or geographic "window". That is, as suggested above, allocation-routing equipment and techniques may be employed in various of the formats to window callers. With the system, callers are screened or qualified at the time of a call, identified in a particular calling sequence, designated for identification and quiz answers are given for subsequent processing. Alternatively, players could participate by providing their credit card for billing or be billed through the "pay-to-dial" network. Consider an exemplary format.

A key to participation in the game show may involve the purchase of a particular product. For example, a person desiring to participate may purchase a product which carries a concealed key number. The number serves as a caller's key to participation in the game show.

In accordance with the disclosed operating format, after watching the broadcast of a television show (possibly a serial episode) the participant actuates the push buttons **14** at one of the remote terminals T1–Tn to accomplish an interface communication with the select operating format. For example, the caller may actuate the buttons **14** for the station number "277-7777" which identifies the game format of current description.

Assume responsive operation of the communication facility C to couple the caller through the automatic call distributor AC1 to the interface **20**.

Upon establishing a connection, the interface **20** receives the caller's telephone number through ANI equipment and a data cell in the memory **98** (FIG. 4) is assigned to the caller. Specifically, for example, associative coupling is provided for the caller through the switch **21** (FIG. 1) to the processor PR1 containing the memory **98** (FIG. 4) and a cell C2 assigned to the caller. A block format **200** is illustrated in FIG. 7 indicating the data that is developed in the cell C2. At the outset, the caller's telephone number is stored in a section **201** followed by uses/month in section **202**.

Next, the caller is greeted and requested to give the key number entitling him-to participate in the game show. The instruction constitutes an initial action to take place in an interval of qualification during the time t1. The caller actuates the buttons **14** providing digital representations to the qualification unit **93** (FIG. 4) and the look-up table **99** is consulted. Note that the table **99** may be a large, shared unit that tabulates each of the key numbers and accounts for their use. If the caller has identified a proper key number, the process proceeds and the key number is accounted, i.e. incremented or decremented to the limit of use if any. Alternatively, a repeat information operation may be requested as described in detail above.

As a further check during the qualification stage, the use-rate calculator **100** may function to determine whether or not an excessive number of calls have originated from the designated number. Thus, consideration involves calls or value with reference to a predetermined period of time. Again, a shared calculator may be used or addressing may obtain selectivity on the basis of calling numbers. If a large number of calls have originated from a single telephone terminal, a fraudulent situation may be suggested. Assuming no such indication occurs, the number of uses is registered in a section **200** (FIG. 7) and the operation proceeds from the interval t1 to interval t2.

During the interval t2, the sequencer **94** registers the precise time of the call in the buffer storage **97**, specifically in a section **204** as illustrated in FIG. 7. With the entry of such data, the system passes from the operating interval t2 to t3.

The caller is next asked to identify himself in some specific manner. For example, the caller may simply be asked to provide the year of his birth. Alternatively, somewhat comprehensive information may be taken as in the form of drivers' license numbers, social security numbers and so on. Of course, such data may be employed for subsequent identification of the caller and, accordingly, is registered in the buffer storage **97** (FIG. 4). Specifically, identification information is registered in section **206** of the block **200** as shown in FIG. 7.

In addition to receiving identification information from a caller, the system assigns a designation to the caller: Specifically, the random number generator **101** (FIG. 4) provides a number which may be encrypted along with other identification data as the caller's personal identification to provide a numerical designation that is registered in the storage **97**. Specifically, the designation is stored in a section **208** as illustrated in FIG. 7. With the designation operation complete, the interval t3 terminates initiating the data accumulation phase which occurs during an operating interval t4.

At this juncture, operating elements within the processing unit **92** will be considered in relation to an explanation of the manner in which select questions are provided to a caller and his answers received and recorded for subsequent processing to determine winners.

Preliminarily, reference will be made to FIG. **8** showing elements involved in the operating format which are contained in the processing unit **92** (FIG. 4) in association with the memory **98**. To avoid confusion, the elements identified in FIG. **8** are designated by fresh numerals.

To accommodate the exemplary operating format, a dramatic program might be recorded preparatory to the television broadcast. A substantial number of questions would then be formulated based on the dramatic program. For example, "How many people were present when the will was read?"

It is contemplated that the dramatic program would be broadcast to different geographical segments of the country during different time intervals. To accommodate the different time intervals, it is proposed to utilize different questions for each geographic segment. That is, the basic format can remain the same, only the questions change by time zone to avoid study and collaboration on questions as a result of time shifts. A question propounded to a Chicago caller should not be repeated to a Los Angeles caller. In any event, callers might be given three questions randomly drawn from a pool serving one geographic segment and three questions drawn from a different pool serving another geographic segment.

The signals for prompting a voice generator are registered in memory sections MS1 through MSn. Each of the memory sections MS1–MSn is served by an address input AI1–AIn respectively. Similarly, the address inputs AI1–AIn are instructed by random number generators NG1–NGn, in turn actuated by decoders DE1–DEn. Consider the operating sequence of the memory MS1 as an example.

The decoder DE1 is responsive to telephone calling numbers (provided by ANI equipment) indicative of a particular geographic area. Note, for example, that area code numbers afford an effective geographic classification of callers which is very useful in many formats or processes of statistical analysis in accordance herewith. Note that geographic (or other) classification in accordance herewith is also accomplished by the called numbers provided. Each of several television stations would solicit calls for different numbers as a result, either by DNIS or call channeling. Select processors would be reached through the interface units, e.g. interface **20** FIG. **1**. In operation, the decoder DE1 determines a call is from a specific geographic area and accordingly provides a signal to actuate the random number

generator NG1. As a consequence, the random number generator NG1 provides a series of three random numbers in the form of addresses for the memory MS1. That is, the addresses may simply comprise three alphanumeric bits supplied to the address input AI1 to prompt the provision of three sets of voice generator signals for announcing the three questions in sequence. For example, the first question might be as suggested above: "Push the button on your telephone for the number of persons present in the room when the will was read".

The voice generator signals are supplied from the memory MS1 (within the processing unit **92**, FIG. **4**) to the interface **20** (FIG. 1) which generates audio signals to actuate the caller's hand piece **10**. Accordingly, the caller is instructed to answer three questions, the responses being recorded in a section **210** of the data block **200** (FIG. **7**). Note that the clock **105** (FIG. **4**) may be utilized to limit the response period allowed each caller.

As indicated above, to accommodate broadcast of the program in a different time slot for a different geographic area, the decoder DEn (FIG. **8**) actuates the random number generator NGn to address the memory MSn to provide three different questions as a result of a random selection. Accordingly, within a time or times (perhaps limited and offset) after the conclusion of the program, a substantial number of callers are accounted for in cells of the memory **98** and similar units of the composite system. The cells indicate sequences of calling and also may contain billing data where appropriate. That is, pay-to-dial operations avoid the need for billing, yet it may still be made of record.

Subsequent to the data accumulation phase of operation, the processing unit **92** (and its equivalents) is actuated during an off-line processing interval to isolate the subset of callers correctly responding to the questions. In accordance with one format, the subset of successful callers may be reduced to a sub-subset as by a random computer "draw" to define a group of significant winners. That is, a random number generator may be employed as explained above.

As an alternative to subsequent processing, the system may inform callers of their success during the course of the interface telephone call. That is, callers might simply be informed by cuing the voice generator: "Your answers are correct and in accordance with the program game, you will now be entered in the sweepstakes draw for the prize . . . ." Thus, the format defines a subset then further selects a sub-subset of winners. In any of the various formats, the status of the analysis can be televised by selecting a camera focused on the interface terminal IT.

Still another operating format for the system takes the form of polling operations to determine opinion or facts. An illustrative form of the format is disclosed below again in association with a television broadcast.

Generally, the illustrative polling format is contemplated in association with a television broadcast addressing a matter of current interest as, for example, a political issue or election. A master of ceremonies propounds questions to a viewing audience, many of whom are on-line through an interface of a system of the present invention. The master of ceremonies or commentator instructs the callers who are regulated and controlled by the system of the present invention to provide digital data which the system processes to inform the commentator as with regard to subsets of callers. For example, the commentator may be statistically informed as to the numbers of callers holding specific views. Consider a specific exemplary operating format.

Assume the existence of a system in accordance with the present invention installed for use in association with a television broadcasting facility. Of course, various previous arrangements could be involved; however, according to one arrangement a commentator simply invites members of the viewing audience to call a specific number and express their views with respect to a specific issue. Callers located at terminals T1–Tn (FIG. **1**) activate the terminals to accomplish an interface with one of the processing systems P1–Pn as explained above. Note that the processor (or the interface **20** may involve operation of the qualification unit **93** (FIG. **4**) to prevent callers from loading the poll. That is, to prevent multiple calls from a single terminal that would distort a poll, the qualification unit **93** registers calls in association with the use-rate calculator **100**. Interfacing a specific processor, callers are screened by the qualification unit **93** (FIG. **4**). In such a poll, it may be important to control the sampling group on a statistical basis. For example, it may be desirable to limit callers from each of several geographic areas. Accordingly, by the use of ANI equipment, the caller's telephone number is provided to the qualification unit **93** during the preliminary interval t1, and a determination is performed with regard to the number of involved callers from the geographic area using the look-up table **99**. On attaining a full quota from a specific area, a subsequent caller may be informed that the lines are full. Alternatively, the caller may be requested to provide his telephone number for screening in the event ANI equipment is not available.

The caller may be requested to provide additional information so as to poll a balanced group. For example, a caller might be asked questions concerning age, political registration and so on by prompting the interface unit **20** to pose audio questions and testing the digital results through the qualification unit **93** as with reference to the look-up table **99**.

As indicated above, in the event that the broadcast television program is one of a series, it may be desirable to limit the extent of participation over a period of several programs. Accordingly, the use-rate calculator **100** (FIG. **4**) may be employed in association with the qualification unit **93**. That is, if a calling number has participated in a prior poll, it may be denied access for a subsequent poll or its data not counted. Such operation would involve the use-rate calculator **100** in association with the qualification unit **93** performing logic tests to actuate the voice generator of the interface **20** for providing an appropriate interchange with a caller.

With the screening or qualification of a select group of callers, the sequencer **94** (FIG. **4**) may or may not be involved to identify the order of callers. Also, the designation unit **96** may or may not be involved in view of the fact that for many polls there is little interest in subsequently identifying callers.

In the poll-format operation of the system, it is important to provide a capability of defining select intervals during which callers may provide data. In one arrangement, with the consummation of a communication interface between a caller and a processor unit, the audio of the television broadcast is keyed from the audio unit AD through the switch **21** (FIG. **1**) for communication to the caller.

With a multiplicity of callers in interface relationship with the processors PR1–PRn as function units, a polling question is stated, for example: "If you favor expanded trade with . . . at the tone press button one; if you do not, press button two".

To control the interval of polling, the command computer terminal CT (FIG. **1**) is actuated to enable the callers timely access to the processors.

At the expiration of a polling interval, the interfaces may be terminated or additional questions may be propounded. In

any event, subsequent to the data-gathering phase, the bulk data is supplied to the command computer terminal CT incorporating computing facility to isolate subsets for communication by the broadcast. Accordingly, an effective on-line poll can be conducted with statistical sampling control and prompt display of responses.

As explained above, the arrangement of the function unit (or units) may be variously embodied in a single processor or many processors, depending on various considerations as time sharing, multiplexing, paralleling and so on. The systems as described above embody the components bulked together in one location. However, components of the system could be spaced apart geographically, using dedicated lines or polling techniques. An illustrative embodiment is shown in FIG. **9**.

Call distributors CD1–CDn are at different geographic locations along with associated interface units IA1–IAn and IB1–IBn. Each of the interface units, as unit IA1 is coupled to a central processor **251** as indicated by lines **252, 254, 256** and **258**. Each of the lines may take the form of a dedicated telephone line or a polling telephonic coupling.

In the operation of the system of FIG. **9**, the call distributors CD are coupled to a telephonic communication system and accordingly allow the interface units I to provide interface communication between the central processing unit **251** and a multitude of remote terminals T1–Tn as illustrated in FIG. **1**. With data accumulated in the cells, it may be variously down loaded as to a central processing station. Thus, the distributed-component system is capable of executing the various formats as explained above with reference to the illustrative structure.

In view of the above explanation of exemplary systems, it will be appreciated that other embodiments of the present invention may be employed in many applications to accumulate statistical data, process such data, and define subsets of callers of concern. While certain exemplary operations have been stated herein, and certain detailed structures have been disclosed, the appropriate scope hereof is deemed to be in accordance with the claims as set forth below.

What is claimed is:

1. A system to be utilized with a telephone facility for on-line handling of customer data contained in a memory in accordance with a select operating format comprising:

a plurality of call distributors for routing calls based upon availability wherein said plurality of call distributors are located at different geographic locations, said plurality of call distributors receiving called terminal digital data (DNIS) signals automatically provided by said telephone facility to identify said select operating format from a plurality of distinct operating formats and automatically receiving caller telephone number data from said telephone facility;

an operator terminal for use by a person to communicate through the telephone facility;

interface switching means connected to said plurality of call distributors and said operator terminal for receiving incoming calls routed by said call distributors;

computer means coupled to said interface switching means for connecting an incoming call by a caller to said operator terminal based on a condition, said caller telephone number data being stored in said memory such that said computer means in accordance with said select operating format is capable of accessing said customer data on a selected customer which has a telephone number corresponding to said caller telephone number data automatically provided from said telephone facility, said computer means visually displaying said customer data on a selected customer and said operator terminal capable of providing data entries to said memory; and

said customer data on a selected customer contained in memory is updated by incorporating said data entries into said customer data.

2. A system to be utilized with a telephone facility according to claim **1**, further comprising:

voice generator structure coupled to said interface switching means for prompting callers to enter digital data.

3. A system to be utilized with a telephone facility according to claim **1**, further comprising:

qualification structure coupled to said computer means for testing said customer data.

4. A system to be utilized with a telephone facility according to claim **3**, wherein said qualification structure tests a caller provided PIN number.

5. A system to be utilized with a telephone facility according to claim **1**, wherein said operator at said operator terminal enters data relating to said caller.

6. A system to be utilized with a telephone facility according to claim **1**, wherein said operator terminal is provided with a display of data relating to said select operating format under control of said called terminal digital data (DNIS) signals.

7. A system to be utilized with a telephone facility according to claim **1**, wherein said customer data on said selected customer includes data relating to a limit on use.

8. A system to be utilized with a telephone facility according to claim **7**, wherein said limit on use specifies a predetermined number of uses.

9. A system to be utilized with a telephone facility according to claim **7**, wherein said limit on use specifies a one time only use.

10. A system to be utilized with a telephone facility according to claim **7**, wherein said limit on use specifies a use relating to a dollar amount.

11. A system to be utilized with a telephone facility according to claim **7**, wherein said customer data on a selected customer includes data based on a specified limit on a number of calls from said caller during specified multiple intervals of time wherein said specified limit is automatically refreshed at the beginning or the end of each of said multiple intervals of time.

12. A system to be utilized with a telephone facility according to claim **7**, wherein said limit on use specifies an extent of access.

13. A system according to claim **7**, wherein the plurality of call distributors located at the different geographic locations are interconnected to said memory which is centrally located to receive, the customer data entered by said operator terminal and update the customer data.

14. An analysis control system for use with a communication facility including remote terminals for individual callers, wherein each of the remote terminals comprises a telephonic capability including voice communication means and digital input means in the form of an array of alphabetic numeric buttons for providing data, the analysis control system comprising:

interface structure coupled to the communication facility to interface the terminals for voice and digital communication and including structure to provide signals representative of data developed by the terminals;

voice generator structure selectively coupled through the interface structure to the terminals for providing vocal operating instructions to individual callers;

record memory connected to the interface structure for updating a file and storing data relating to certain individual callers;

qualification structure to access the record memory to test key number data provided by the individual callers to ensure that the key number data is valid;

generator structure selectively coupled to the interface structure and the record memory for providing computer generated numbers to the individual callers and storing the computer generated numbers in the record memory; and

analysis structure connected to the record memory for processing at least certain of the data relating to certain individual callers subject to qualification by the qualification structure.

15. An analysis control system according to claim **14**, wherein said qualification structure further tests the key number data with respect to a predetermined limit on use.

16. An analysis control system according to claim **15**, wherein the limit on use relates to a number of times the individual callers are entitled to call.

17. An analysis control system according to claim **15**, wherein the limit on use relates to a dollar amount.

18. A control system according to claim **14**, further including means to control processing formats of the analysis structure in accordance with signals automatically provided by the communication facility indicative of one of a plurality of called numbers (DNIS).

19. A control system according to claim **18**, wherein the data relating to certain individual callers includes calling number identification data for certain individual callers automatically provided by the communication facility.

20. A control system according to claim **14**, wherein the computer generated numbers provided to callers are indicative of sequence data.

21. A system to be utilized with a telephone facility for on-line handling of customer data contained in a memory in accordance with a select operating format comprising:

a plurality of call distributors for routing calls wherein said plurality of call distributor are located at different geographic locations;

an operator terminal for use by a person to communicate through the telephone facility;

a plurality of interface switching structures located at different geographic locations and connected to the plurality of call distributors and the operator terminal for receiving incoming calls routed by said plurality of call distributors based on call allocation routing data and for receiving called terminal digital date (DNIS) signals automatically provided by the telephone facility to identify the select operating format from a plurality of operating formats; and

processing means connected to the plurality of interface switching structures for receiving customer number data entered by a caller and for storing the customer number data in a central memory accessed by said plurality of interface switching structures and based on a condition coupling an incoming call to the operator terminal, the processing means visually displaying the customer number data, the operator terminal providing other data entries to the central memory to update data relating to the caller.

22. A process for controlling operations of an interface with a telephone communication system, the process including the steps of:

providing key numbers specifying limits on use to entitle individual callers to access the operations of the interface with the telephone communication system;

coupling remote terminals to the interface for providing voice signals to the individual callers;

receiving the key numbers as digital identification data in the form of terminal digital data automatically provided by the telephone communication system for the individual callers and additional data provided from the remote terminals under control of the individual callers;

qualifying the individual callers by testing to determine if the individual callers are entitled to access the operations of the interface by testing the key numbers for the individual callers with stored key numbers to ensure their validity and further testing the key numbers based on the limits on use specified for the individual callers and accordingly providing approval signals for qualified individual callers;

accessing a memory with the key numbers for the individual callers and storing data relating to calls from the individual callers; and

processing at least certain of the additional data responsive to the approval signals.

23. A process according to claim **22**, wherein said coupling step includes generating the voice signals for actuating the remote terminals to provide vocal operating instructions to specific individual callers.

24. A process for controlling operations of an interface with a telephone communication system, the process including the steps of:

providing key numbers specifying limits on use to entitle individual callers to access the operations of the interface with the telephone communications system;

coupling remote terminals to the interface for providing voice signals to the individual callers;

receiving the key numbers as digital identification data in the form of terminal digital data automatically provided by the telephone communication system for the individual callers and answer data provided from the remote terminals under control of the individual callers;

qualifying the individual callers by testing to determine if the individual callers are entitled to access the operations of the interface by testing the key numbers for the individual callers with stored key numbers to ensure their validity and testing the key numbers based on the limits on use for the individual callers and accordingly providing approval signals for qualified individual callers;

accessing a memory with the key numbers for the individual callers and storing data relating to calls from the individual callers;

processing at least certain of the answer data responsive to the approval signals; and

providing on-going accounting data to the individual callers, the on-going accounting data for at least one of a plurality of intervals being determined at least in part by the answer data provided by an individual caller during a call and during at least one of the intervals includes real time data provided to the individual caller on-line.

25. A process according to claim **24**, wherein one of the limits on use relates to a dollar amount.

26. An analysis control system for use with a communication facility including remote terminals for calls by individual callers, wherein each of the remote terminals comprises a telephonic capability including voice communication means and digital input means in the form of an array of alphabetic numeric buttons for providing data

and wherein the communication facility has a capability to automatically provide terminal digital data to indicate a calling number, the analysis control system comprising:

interface structure coupled to the communication facility to interface the remote terminals for voice and digital communication and including means to provide caller data signals representative of data relating to the individual callers developed by the remote terminals and the terminal digital data;

analysis structure for processing the caller data signals;

structure for controlling the analysis structure in accordance with the terminal digital data; and

qualification structure to test the terminal digital data based upon a predetermined limit on use and further testing whether a call by one of the individual callers is being made during a limited period of time.

27. An analysis control system according to claim **26**, wherein the limit on use is a limited dollar amount.

28. An analysis control system according to claim **26**, further comprising:

voice generator structure to provide one of the individual callers with on-going accounting data related to the call.

29. An analysis control system according to claim **28**, wherein the on-going accounting data takes into consideration answer data provided by the callers.

30. An analysis control system according to claim **26**, wherein said analysis structure assigns sequential transaction number data to identify calls by individual callers.

31. A system according to claim **1**, wherein said telephone facility further comprises call allocation routing to limit or control individual interfaces to a specific time or geographic window.

32. A system according to claim **21**, wherein said processing means controls a limit on access to said select format based on prior use.

33. A system according to claim **21**, wherein said plurality of interface switching structures receive and store calling number identification signals automatically provided by said telephone facility.

34. A system according to claim **33**, wherein said calling number identification signals control at least in part processing of said customer number data entered by said caller.

35. An analysis control system according to claim **26**, wherein said interface structure provides on-going accounting data to the individual callers, the on-going accounting data for at least one of a plurality of intervals being determined at least in part by the answer data provided by one of the individual callers during a call and during at least one of the intervals includes real time data provided to one of the individual callers on-line.

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,815,551
DATED : September 29, 1998
INVENTOR(S) : Ronald A. Katz

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page,
Item [56], **References Cited**, OTHER PUBLICATIONS,
The following references contain typographical errors:

"The Voice Response Peripheral that Turns Every Touch-Tone Telephone Into A Computer Terminal", Periphonics Corporation — (Brochure) (Undated)

"AT&T 2: Reaches agreement with Rockwell (ROK)", Aug. 26, 1986—(Press Release) AT&T: Expands Computer speech system product line, Apr. 14, 1986—(Press Release).

Adams, Cynthia, "Conversing With Computers", Computerworld on Communications, May 18, 1983, vol. 17, No. 20A, pp. 36-44 (Article)

"Bid Results via Voicemail-Flight Deck Crew Members", May 1, 1985 (Script)

Emerson, S.T., "Voice Response Systems-Technology to the Rescue for Business users", Speech Technology, Jan./Feb. '83, pp. 99-103 (Article)

Sagawa, S., et al., "Automatic Seat Reservation By Touch-Tone Telephone", Second USA Japan Computer Conference, 1975, vol. 2, pp. 290-294 (Article)

Mullen, R.W., "Telephone—home's 'friendliest' Computer", Inside Telephone Engineer And Measurement, May 15, 1985, vol. 89, No. 10,—(Article).

Kaiserman, D.B., "The Role of Audio Response In Data Collection Systems", Proceedings of the Technical Sessions, Palais des Expositions, Geneva, Switzerland, Jun. 17-19, 1980, pp. 247-251 (Article)

Imai, Y., et al., "Shared Audio Information System using New Audio Responses Unit" Japan Telecommunications Review, Oct. 1981, vol. 23, No. 4, pp. 383-390 (Article)

Column 4,
Line 8, "the, numeral" should be -- the numeral --.
Line 42, "As represented;" should be -- As represented, --.

Column 6,
Line 2, "geographical-area" should read -- geographical area --.

Column 7,
Line 28, "manifest" should be -- manifested --.
Line 31, "queuing" should be -- cueing --.

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,815,551
DATED : September 29, 1998
INVENTOR(S) : Ronald A. Katz

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 12,
Line 26, "P1 coupling" should be -- P1 and coupling --.

Column 16,
Line 29, "caller's" should be -- callers --.
Line 60, "nonreal-time" should be -- non real-time --.
Line 65, "however, is" should be -- however, it is --.

Column 17,
Line 37, "him-to" should be -- him to --.

Column 20,
Line 9, "20" should be -- 20) --.

Column 21,
Line 28, "down loaded" should be -- downloaded --.

Column 22,
Line 52, "receive, the" should be -- receive the --.

Column 23,
Line 39, "distributor" should be -- distributors --.
Line 48, "date" should be -- data --.

Signed and Sealed this

Twenty-ninth Day of October, 2002

Attest:

Attesting Officer

JAMES E. ROGAN
Director of the United States Patent and Trademark Office

US005815551C1

(12) EX PARTE REEXAMINATION CERTIFICATE (8570th)

United States Patent

Katz

(10) Number: US 5,815,551 C1

(45) Certificate Issued: Sep. 27, 2011

(54) **TELEPHONIC-INTERFACE STATISTICAL ANALYSIS SYSTEM**

(75) Inventor: **Ronald A. Katz**, Los Angeles, CA (US)

(73) Assignee: **General Electric Capital Corporation**, Atlanta, GA (US)

Reexamination Request:
No. 90/008,039, May 31, 2006

Reexamination Certificate for:

Patent No.:	**5,815,551**
Issued:	**Sep. 29, 1998**
Appl. No.:	**08/473,320**
Filed:	**Jun. 7, 1995**

Certificate of Correction issued Oct. 29, 2002.

Related U.S. Application Data

(63) Continuation of application No. 07/335,923, filed on Apr. 10, 1989, now Pat. No. 6,016,344, which is a continuation of application No. 07/194,258, filed on May 16, 1988, now Pat. No. 4,845,739, which is a continuation-in-part of application No. 07/018,244, filed on Feb. 24, 1987, now Pat. No. 4,792,968, which is a continuation-in-part of application No. 06/753,299, filed on Jul. 10, 1985, now abandoned.

(51) **Int. Cl.**

A63F 3/08	(2006.01)
G07C 11/00	(2006.01)
G07C 15/00	(2006.01)
H04M 3/36	(2006.01)
H04M 3/38	(2006.01)
H04M 3/436	(2006.01)
H04M 3/46	(2006.01)
H04M 3/493	(2006.01)
H04M 3/51	(2006.01)
H04M 11/00	(2006.01)
H04M 3/50	(2006.01)
H04M 3/42	(2006.01)
H04M 3/487	(2006.01)
H04Q 3/00	(2006.01)
H04Q 3/545	(2006.01)
H04Q 3/66	(2006.01)
H04Q 3/72	(2006.01)
H04Q 3/74	(2006.01)
H04Q 3/64	(2006.01)

(52) **U.S. Cl.** **379/88.19**; 379/91.02; 379/189; 379/198; 379/127.01; 379/207.13; 379/207.14; 379/265.02

(58) **Field of Classification Search** ..... None
See application file for complete search history.

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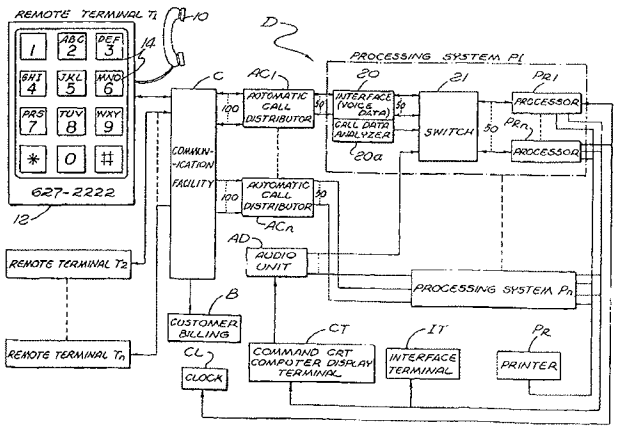
(Continued)

Primary Examiner—Erik Kielin

(57) **ABSTRACT**

A system D interfaces with a multiplicity of individual terminals T1-Tn of a telephone network facility C, at the terminals callers are prompted by voice-generated instructions to provide digital data that is identified for positive association with a caller and is stored for processing. The caller's identification data is confirmed using various techniques and callers may be ranked and accounted for on the basis of entitlement, sequence or demographics. Callers are assigned random designations that are stored along with statistical and identification data. A break-off control circuit may terminate the computer interface aborting to a terminal for direct communication with an operator. Real-time operation processing is an alternative to stored data. The accumulation of stored data (statistical, calling order sequence, etc.) is variously processed and correlated as with developed or established data to isolate a select group or subset of callers who can be readily identified and reliably confirmed. Different program formats variously control the processing of statitical data as for auction sales, contests, lotteries, polls, commercials and so on.



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EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **14**, **15**, **17** and **22** are cancelled.

Claims **1-13**, **16**, **18-21** and **23-25** were not reexamined.

* * * * *

United States Court of Appeals
for the Federal Circuit

N RE RONALD A. KATZ TECHNOLOGY LICENSING L.P., 2015-1170

CERTIFICATE OF SERVICE

I, John C. Kruesi, Jr., being duly sworn according to law and being over the age of 18, upon my oath depose and say that:

Counsel Press was retained by COOLEY, LLP, Attorneys for Appellant to print this document. I am an employee of Counsel Press.

On **January 30, 2015**, Counsel for Appellant has authorized me to electronically file the foregoing **Appellant's Opening Brief** with the Clerk of Court using the CM/ECF System, which will serve via e-mail notice of such filing to any of the following counsel registered as CM/ECF users:

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January 30, 2015

/s/ John C. Kruesi, Jr.
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CERTIFICATE OF COMPLIANCE

1. This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B), as extended in accordance with Katz's pending request to extend the word-count limitation for the opening brief. The brief contains 6,412 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6). The brief has been prepared in a proportionally spaced typeface using Microsoft Office Word 2013 in 14 point Times New Roman Font. As permitted by Fed. R. App. P. 32(a)(7)(C), the undersigned has relied upon the word count of this word-processing system in preparing this certificate.

Dated: January 30, 2015

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